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Vol. 19

AUGUST, 1945

No. 8

1745



★ NEAR HISTORIC CAMINO REAL,
A MODERN INDUSTRY RISES

... See Page 14

1945




"The Cellulose Age"

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PULP & PAPER INDUSTRY

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AUGUST • 1945



**The Management Journal
Covering North America's
Wood Pulp, Paper and
Cellulose Industries**

SEATTLE (4)

Miller Freeman President
Lawrence K. Smith Manager
Albert Wilson Editor
Miller Freeman, Jr. Circulation Manager
Lucile Ayers Assistant Editor
W. E. Crosby Forestry Editor

Publishing Office

71 Columbia St. Tel. MA. 1626

NEW YORK (17)

Nard Jones Associate Editor
370 Lexington Ave. (120 East 41st St.)
Tel. Murray-Hill 3-9295

PORTLAND (4), ORE.

Chester A. Fee Associate Editor
534 S. W. 3rd Ave.
Tel. Beacon 6348

NEW ORLEANS (12)

Wm. J. Krebs Southern Editor
333 St. Charles Ave. Tel. Magnolia 7651

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675 W. Hastings St. Tel. Marine 1520

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121 Second Street. Tel. GA. 5887

LOS ANGELES (13)

Arthur Ponsford Regional Editor
124 W. Fourth St. Tel. MUtual 8196

DENVER (2), COLO.

Karel Wegkamp Regional Editor
711 Colorado Bldg. Tel. Keystone 6051

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TRENDS IN FOREST USE

Editorials

EVERY year greater forest areas of the United States are being placed on a sustained yield basis. This trend can be expected to rise sharply after the war when manpower and equipment are available to put into effect the forestry and manufacturing methods which will establish forest products industries on a permanent basis.

In Congress the other day, Rep. Harris Ellsworth of Oregon said: "Present employment in the manufacture of forest products is estimated by the Forest Service at 3,500,000 man-years. If, by turning to account what has heretofore been regarded as waste wood, the total forest production figure is increased even 10 per cent—a modest goal—some 350,000 man-years of additional employment will be provided in the postwar era. This I consider a minimum figure; other estimates place the potential increase in employment as high as 2,000,000 man-years."

Where pulp and paper mills have taken over the forests of the big companies in the South and West this year—and in recent years, many more jobs have been created and the forests have found a new and perpetual purpose. The trend toward closer utilization of wood will save millions of acres of forests for future years, while at the same time increasing the productivity and value of the forests.

ELECTRONICS AND THE PAPER INDUSTRY

ELECTRONICS has been described as a new "industry" and in a recent free-for-all quiz bee, War Manpower Commissioner McNutt mentioned it as something that might take up some of the slack one day in supplying those now fabulous and much-discussed 60,000,000 jobs-to-be.

A representative of this magazine being present on that occasion, it was noted that the McNutt list began and ended with "electronics"—but the McNutt right arm was extended mid-air as though to sweep in a lot of other industries whose names he could not think of right off the bat. And being a man fast on his feet, in political parlance, he was thereupon off on another subject.

No doubt the men—scientists and engineers—who are achieving things in electronics, would resent this political adoption of the object of their intellectual devotion and the insinuation that it is going to perform miracles and make jobs by the millions.

Electronics already has many applications in the papermaking and the paper converting industries. It will have many more, no doubt. It is particularly useful in automatic packaging devices. With the trend toward faster and faster paper production and more split second controls, electronics will have uses in this industry.

But, as has been demonstrated many a time in the past when a new discovery comes along, it is not going to throw every other kind of control mechanism into the discard.

The experts who are now devoting their attention to radar and other wartime uses of electronics, will not in peace-time start developing wholesale substitutions for the good old magnetic switch for example.

The magnetic switch probably will continue to do a satisfactory job on small motors. Electronics in the paper industry will be a supplementary device. It would be impractical to apply it everywhere. It will be needed—and therefore used—where split second control, great speed and precision are desired.

U. S. Army Gets All Belgian-Produced Paper

More light on the importance of the U. S. paper industry mission now quartered in Belgium was revealed in a Foreign Economic Administration release of July 28 which revealed that the entire paper production of Belgium will be used exclusively by the U. S. Army for redeployment.

France has refused to allocate any of its desperately needed coal to its paper mills, which presumably caused the breakdown of U. S. Army efforts to get their needed paper in France, as was reported in this magazine last month.

Members of the U. S. mission in Belgium are Charles Grondona, Arthur G. Wakeman and George Balko. Mr. Wakeman and possibly others of this mission were recently in Sweden, apparently to get Swedish assistance for the program.

Sweden is publishing 26-page newspapers and a new 2,300-page Stockholm phone book—evidence of good condition of Swedish pulp and paper supply. Two to six-page papers are published in France and England, by comparison.

There has been an almost complete breakdown of the pulp and paper industry throughout Europe, said Arthur Bevan, chief of the Paper, Lumber and Containers Section, Foreign Economic Administration, Washington, D. C., due principally to lack of coal.

Belgium, however, has allocated 6,000 tons of coal per month to the paper industry, which will exclusively serve the U. S. Army. How this is to be used was explained in this magazine last month. Paper production in France and the Netherlands is negligible. Sweden's problem is coal. Norwegian mills are short wood, because of wartime sabotaging of German wood procurement. Swedish pulp is expected to raise British paper consumption to 50% of prewar levels.

Nearly all Polish mills have been destroyed but German mills are mostly in good condition, and also have plenty of wood. Allied policy has not been decided regarding permitting German mills to produce, Mr. Bevan said, but later PULP & PAPER INDUSTRY learned from other sources that the first German language paper under Allied government has been permitted to start up and probably is using German paper.



GEORGE A. BALKO, Operating Dept., The Mead Corp., Chillicothe, Ohio, who has gone to Europe under auspices of U. S. Army Quartermasters Corps, with temporary rank of Colonel. His assignment is to advise and assist in reestablishment of certain parts of Continental Europe's paper industry.

George Balko Joins Mission in Europe

George A. Balko, operating department executive of The Mead Corp., Chillicothe, O., has now joined Charles A. Grondona, of the Crown Zellerbach sales offices, New York City, and Arthur G. Wakeman, coordinator of expansion for Kimberly-Clark Corp., Nee-nah, Wis., on a special mission to Europe.

They bear temporary rank and title of colonels. These three were appointed in June to assist Continental European paper mills to resume production, especially of papers needed for the redeployment of its European military forces.

Announcement of the appointment and departures of Messrs. Grondona and Wakeman for Europe were reported in last month's pulp and paper industry (pictures, also) and the purpose of the mission was described in detail. For personal reasons, Mr. Balko's departure was unavoidably delayed until late July.

He has now flown to Europe and presumably has joined his associates in Brussels, which was their first base of operations.

A native of New York City and M. E. graduate of Stevens Institute of Technology, served as a Navy officer in the last war. Thus, he has now served as officer in both branches of service. He gave up a career as a marine engineer to join the Laurentide Co. at Grand Mere, Que., where he became pulp superintendent. When this mill was bought by Consolidated of Canada, he was transferred to that company's Belgo division at Shawinigan Falls, Que., and became general superintendent. Later, he was made manager of the Port Alfred, Que., division. He left Consolidated to be mill superintendent of Manitoba

Paper Co., Pine Falls, Man. Last year he returned to the U. S., joining The Mead Corp. For several years he served on the groundwood committee of the Canadian Pulp and Paper Ass'n. He has been granted a leave of absence and he and his associates may be in Europe for about a year.

Ted Tinker Expects No Radical Upswing in Paper

There will be no sudden increase in United States paper production resulting from resumption of deliveries of pulp to this country by Swedish pulp manufacturers, according to E. W. Tinker, executive secretary of the American Paper and Pulp Assn. He points out:

1. The industry is already operating at over 90% capacity using domestic and Canadian pulp.
2. Domestic pulpwood receipts and inventories are precariously low in some regions, especially the Northeast.
3. Pulp inventories are dangerously low.
4. It will take some time for an appreciable volume of Swedish pulp to reach this country.
5. Shortages of other non-fibrous raw materials are threatened.
6. Labor shortage in the mills and in the woods has by no means been overcome.
7. Increased pulp supplies may be required to restore prewar weight bases.

Cultural Famine In Czechoslovakia

A cultural famine was keenly felt in Czechoslovakia during the six years of Nazi occupation, as revealed in a letter from a Prague publishing house to a New York commissioner containing an order for vast quantities of American books and newspapers, with a plea that they be delivered with "utmost speed."

The order, which indicated an apparent lack of censorship of titles either by Russian occupying forces or by the national government, called for 300 copies each of "all recent valuable publications in the field of science, politics and history." It said many more books of fiction will be ordered later.

As for newspapers, the Prague firm requested fifty subscriptions to "all the more important dailies."

Pulp and Paper Shipments By Ocean Routes Resume

With the threat of actions of war removed from a great part of the world, the resumption of shipments of pulp and paper by ocean-going ships is resuming. Thus, cheaper transportation is made possible for producers and marketers of pulp and paper.

The first cargo of newsprint to enter the port of Pensacola, Florida, in three years, was unloaded there in mid-July. It came from Bowater's Newfoundland Pulp & Paper Mills, Corner Brook, Newfoundland. A Liberty ship discharged 1,444 tons at Pensacola and proceeded to Houston, Texas, with 5,164 tons.

Bowater's plans to ship newsprint via this route every four months hereafter.

It was reported that a few vessels would be assigned to load pulp in Puget Sound for South America for the first time since war in the Pacific began.

FEA Reveals Discovery of "Superior" German Wood and Pulp Processes

The Foreign Economic Administration in Washington states that American experts in Germany have discovered that production of high grade nitro-cellulose from lower grade wood pulp had been achieved in Germany "with stability superior to the same product made from high grade pulp in the United States."

All of the heavy and medium caliber guns of the U. S. Army have been fired for the past two years by nitro-cellulose made from wood pulp and during most of this period, all of that specialty pulp was produced in Washington state mills.

A "secret" technological and industrial intelligence committee of 200 American experts "invaded" Germany and continental Europe as soon as the war ended to investigate European industrial processes developed during the war.

Planes capable of flying at higher ceilings, new radiation devices, improved X-ray treatment for cancer, new petroleum processes, improved technique in fermenting yeast from wood sugar and new uses of cellulose waste for animal feed were among the German "discoveries" listed as "superior" to knowledge of U. S. industries.

Total wood pulp imported from Sweden between June 25, when the first shipload arrived, and July 27 was 22,753 tons, according to the U. S. Department of Commerce.

This is less than half the 50,000 tons per month for July, August and September which was forecast in a news agency dispatch from Sweden in mid-July. This dispatch said that after that period, the exports to the U. S. were "uncertain" because Swedish pulp manufacturers were "dissatisfied with OPA price ceilings" and the dispatch, which quoted Swedish manufacturers, added that there was "a general feeling" that prices will be revised before the end of the year.

Swedish Interview

Berne Jacobson, reporter for the Seattle (Wash.) Post-Intelligencer, who is in Sweden, sent his paper this interview with Sverker Kastrop of the Swedish Cellulose Co., leading pulp exporter (published Aug. 4):

"Last November the Swedish industry began negotiations in Washington to get the ceiling raised so we could compete in the American market. Our production costs are higher than yours; we have increased shipping costs to contend with.

"We got nowhere, being told in effect that the U. S. has gotten along without Swedish pulp for five years and if the Swedes wanted to sell in the United States, they could do so at American prices. Also, we are told at Washington that we must supply the needs of the liberated countries. Which we are now attempting to do."

The U. S. Pulp Producers Ass'n. disagrees with Mr. Kastrop's contention that production costs are higher in Sweden (assuming he is being quoted correctly), particularly in regard to wages, although it may be that equipment costs are running high abroad. As for the statement concerning increased shipping costs, it is true that these have practically doubled, but the special freight rate reduction to \$8 a ton for Swedish pulp gives them approximately the same advantage they might have obtained in higher-than-ceiling pulp prices.

Between 300,000 and 350,000 tons of Swedish pulp will be imported in the United States by the end of this year, according to Samuel Dauman, a U. S. wood pulp importer who flew to Sweden for a brief visit in early July. Some others think this is rather a high figure. As has been reported, shipping space is limited and unless there is some real relief from the critical coal shortage in Sweden, pulp mills will have to slow up or close up. The agreement with Poland, reported in this magazine last month, is expected to bring Sweden 1,000,000 tons of coal and 200,000 tons of coke.

U. S. Imports of Swedish Pulp (June 25 - July 27, 1945)

Grade:	Short Tons
Sulphite, unbleached	8,155
Sulphate, unbleached	11,517
Sulphite, bleached, or other than rayon and chemical grades	728
Sulphite, bleached rayon and special chemical grades	2,230
Sulphate, bleached	123
Total	22,753

Freeze-Up May Influence Swedish Exports of Pulp to U. S.

The annual freeze-up of the Baltic Sea may still be three or four months away but it is already looming big in the minds of the Swedish pulp industry. It may be an important influence in determining how much pulp the Swedes will export to the United States this year.

The Swedish producers were still unhappy over the American ceiling prices on pulp and had not given up hope of breaking through it, despite being flatly turned down in their request for special consideration. But, at the same time, they fully recognize that the record shows the United States to have been the best-paying and largest market they have ever had over the long pull.

If they are serious in a desire to re-establish themselves in this market after an absence of nearly six years and if they want to appreciably reduce their stockpile of 700,000 tons plus of pulp, it is expected that substantial amounts of the Swedish pulp will arrive at eastern ports and at U. S. ceiling prices.

Swedish mills will naturally want to export what pulp they can before winter. The freeze-up of the Baltic, when it comes, isolates the pulp mills in Northern Sweden and even though Goeteborg, on the southwest coast, remains an open port, rail transportation across Sweden increases shipping expense.

Mission Returns

Benton R. Cancall, director of the Forest Products Bureau of the War Production Board; L. J. Walinsky and E. J. Holmes, British deputy paper controller, have made a flying tour of Britain and the Scandinavian countries in the interest of the United Nations' Combined Raw Materials Board. Obviously, their mission was to try to untangle some of the knots which are developing or threatening to develop in the world pulp and paper trade.

Mr. Cancall, chairman of the pulp and paper group of the Board, and his two associates, returned to Washington

from their European mission in late July. They declined to make any comment on their activities abroad.

Another mission sent to Scandinavia by the WPB and the Combined Raw Materials Board was composed of J. Hale Steinman, director of the Printing and Publishing Division of the Forest Products Bureau, WPB; William G. Chandler, of the Scripps-Howard papers and president of American Newspaper Publishers Ass'n.; Richard W. Slocum, general manager of the Philadelphia Bulletin and former chairman of the newspaper salvage drive, and Dr. Gerard Larocque, technical consultant to the newspaper industry.

The CRMB has recommended that supplies of newsprint for liberated areas of Europe be obtained from Scandinavia to curtail newsprint shipments from North America to Europe. Meanwhile, the WPB will not authorize any newsprint shipments into the U. S. from Europe until European needs are met. On July 30, the WPB directed newsprint users in the U. S. to cut orders placed with mills for August delivery by 5%.

While the problem of Swedish pulp imports was being debated, it was learned that the Norwegian pulp industry has responded favorably to U. S. inquiries and offer to do as much as possible to assist U. S. mills, although the Norwegian mills have been hard hit by the German occupation and drain of wood and materials. In pre-war years, however, Norway exported only one-fourth or one-fifth as much wood pulp as Sweden. U. S. imports from Norway were proportionately even less — being only 5 to 7% of the imports from Sweden.

What Will Swedes Do?

With the two missions from the U. S. having had an opportunity for first hand negotiation in Sweden, it can be confidentially expected that the Swedes will have another look at what they can do to ameliorate the world market problems. Just what they will do about it may be anybody's guess.

Eyes of Industry--Not Just Texas--

Now Equipped With Continent's Most Recent Sulphate Mill and Bleach Plant

At an important industry meeting in early 1944, a prominent War Production Board official singled out the Southland Paper Mills for special mention—declaring that the completion of its kraft pulp mill and bleach plant under difficult wartime conditions would be a great service to the nation at war, easing a critical shortage in sulphate pulps.

Being the most recent plant of this type built on the continent, the Southland Paper Mills are of special interest to the entire North American pulp and paper industry.

Now its sulphate mill and bleach plant have been completed and the PULP & PAPER INDUSTRY is pleased to present here the first comprehensive, illustrated article on this interesting operation—a unique industry in Texas and the South.

Editors of PULP & PAPER INDUSTRY went to Lufkin to obtain, first hand, the story and pictures for readers of this magazine.

IN the big fourdrinier room at the plant of the Southland Paper Mills, Inc., at Herty, near Lufkin, Texas, there is a plaque which reads:

"The first plant for making commercial newsprint paper from southern pine. This institution is the fruit of the genius and devotion of two great Americans—Francis Patrick Garvan and Charles Holmes Herty."

Originally, this plant operated only groundwood and newsprint units, purchasing needed chemical pulp, but ground was broken in 1942 for a sulphate pulp mill. War priorities delayed the pulp mill completion until 1944, since which time the plant has operated as a completely integrated self-sustaining enterprise.

The high degree of resins present in Southern pine made that wood a difficult species to use in pulp and paper manufacturing. But in 35 years there have been so many im-



ERNEST L. KURTH, Texas-born President of Southland Paper Mills. An outstanding executive in Southern pine field. His father founded Lone Star State's oldest forest industry.

provements in the sulphate processes and in bleaching of the stock, that only a mighty reckless prophet would have the temerity to suggest there are any limitations on the qualities and kinds of paper which the South is capable of making. Even satisfactory sulphate dissolving pulps may be just over the horizon.

Making newsprint from Southern pine required no chemical alter-

ation of the groundwood pulp except that it had to be mixed with 20% bleached or semi-bleached sulphate pulp. The completion of its own sulphate mill has increased the pulp mill capacity of the Southland Paper Mills by 200 tons. A proportion of this, of course, is at present market pulp—and very welcome market pulp in a nation at war, with tremendous demands being made for kraft papers for all kinds of essential purposes.

Eventually, Southland will install a second newsprint machine to balance the operation.

At present its 24-hour capacities are:

Groundwood—140 tons

Sulphate pulp—200 tons.

Bleached sulphate pulp—50 tons.

Newsprint—165 tons.

The equipment installed in the operation—some of it developed in wartime and of special interest because of the attention being given to kraft production—is discussed in detail further along in this article.

History

First, a little history. The late Dr. Charles Herty's work in the still-existing Herty Laboratory in Savannah, Ga., in the development of processes for making rayon pulp as well as newsprint from Southern pine is well known. What he accomplished for the vast pine resources, and the people of that part of the country is one of the great

Our Cover Picture--

● shows a general view of Southland Paper Mills at Lufkin, Texas. Out of the smoke of these mills is a vision from a past page of Texas history.

El Camino Real, the historic Spanish highway from Florida to California passed close to what is now Lufkin. Now it is the King's highway. At nearby Nacogdoches stood a famous Spanish landmark—a mission, built in 1719. Its ruins were recently uncovered.

The Spanish and Indian travelers along El Camino Real in 1745 could have had no conception of the new industry which rose in their wake two centuries later. The first newsprint made from Southern pine rolled off presses here in 1940. And now a new interest has been aroused in this Texas operation. For it has completed its own sulphate pulp mill and bleach plant during recent months—utilizing some of the most recent and most interesting equipment for the booming sulphate branch of the pulp and paper industry.

as --Are Upon Southland Paper Mills

Becomes Self-Sustaining, Integrated Operation

Model Power Plant Is Described

achievements of industrial research.

After his process was developed, financial backing was secured and a company formed to inaugurate newsprint manufacture. It was decided to build near Lufkin in the heart of a great area of second-growth loblolly, shortleaf and longleaf pine. The town was named for Dr. Herty, and the plaque in the mill—quoted at the beginning of this article, memorializes him.

Francis P. Garvan, also named in the plaque, was founder and president of the Chemical Foundation, Inc. In 1932, when Dr. Herty opened the laboratory at Savannah, the Chemical Foundation provided him with an initial sum of \$50,000, while the city of Savannah and the State of Georgia contributed the building and funds for operation. In succeeding years, the Foundation contributed to Dr. Herty's work. It can be said that without Garvan's financial and moral support, Dr. Herty would not have been able to carry on his work at the Savannah Laboratory.

When the newsprint mill was projected for Lufkin, Texas, Mr. Garvan aided in the financing of the project.

But he died before the Lufkin mill became a reality. Dr. Herty later passed away and he, too, never saw the first newsprint plant at the site which now bears his name.

A group of Southern newspapers agreed to take the newsprint at rates paid Canadian mills. Within a radius of 50 miles were 3,500,000 acres of 20 million cords of wood, and an all-time supply is assured from over 100,000 acres.

The original \$6,000,000 mill was erected during 1939. Joined together in the enterprise were prominent lumbermen of East Texas, headed by Ernest L. Kurth; newspaper publishers of Texas, Louisiana, Arkansas and Oklahoma, who also buttressed the project with long-term contracts, and the well known pulp and paper firm of Perkins-Goodwin Co.

Newsprint was first made on Jan. 17, 1940. Now, with its own sulphate mill, Southland has more products—some of these being emergency war requirements. They



R. W. WORTHAM, JR., Executive Vice President, Southland Paper Mills. A graduate of Sheffield Scientific School, Yale University.

include dry and wet lap pulp, ammunition board, kraft wrapping paper and newsprint.

Southern newspapers are proud of Southland mills and presently are organized in looking for a site for a second newsprint mill—probably in the Southeast—and have employed an engineer to plan the project.

Personnel

Ernest L. Kurth, president of Southland Paper Mills, Inc., has long been distinguished as a southern pine industry executive. Identified for many years in the activities of the Southern Pine Association, of which he is a past president, he has also administered the affairs of the Angelina County Lumber Co., as well as Southland Mills.

Born in 1885 at Kurth Station, Polk County, Texas, he is the son of the late J. H. Kurth, a lumberman who founded, at Keltys, Texas, in 1888, the oldest sawmill in Texas.

Ernest Kurth graduated from Southwestern University, Georgetown, Texas, in 1905, and started his lumber career as bookkeeper in the Angelina company office in 1907. He started handling sales in 1910; later became vice-president and general manager. He is now

president and general manager.

Richard W. Wortham, Jr., executive vice president of Southland Paper Mills, is a graduate of the Sheffield Scientific School, of Yale University. He entered the pulp and paper industry as an employee of the Abitibi Power & Paper Co., Beaupre, Quebec, in 1927. He became associated with the G. H. Mead Co. in 1930, and Perkins-Goodwin Co., New York, in 1935. He became an executive of Southland in 1944. From Dec., 1943, to Sept., 1944, Mr. Wortham served in the Paper Division, U. S. War Production Board.

Other executive officers are Arthur Temple, vice president, K. W. Cooke, secretary, and Albert Newcomb, treasurer.

Top-ranking operations executive after Mr. Wortham is the mill manager, Walter L. McHale. Mr. McHale first came on the job at Herty six years ago as the representative of the consulting engineering firm of George F. Hardy, of New York. Mr. McHale graduated in mechanical engineering from Pratt Institute, Brooklyn, N. Y., and was associated with George F. Hardy engineering organization for 16 years before joining Southland in July, 1944, as assistant to the president, from which he was recently promoted to his present position. He is a mill manager who really knows his mill from A to Z.

Dr. Charles H. Carpenter, general superintendent of Southland, graduated from the New York State College of Forestry, Syracuse, N. Y., and obtained his doctorate at the University of Darmstadt, Germany, in 1934. He was an assistant to Dr. Herty in his laboratory in Savannah, Ga., and became associated with Southland in 1939.

M. E. Farris, who was named superintendent of the pulp mill at Southland Paper Mills, Inc., Lufkin, Texas, during the current year, had 18 years' experience before becoming associated with the Texas newsprint mill. He went to Southland as tour boss after having been tour foreman for six years with the Container Corp., Fernandina, Fla. Previous to that he was with Crossett Paper Mill, Crossett, Ark., for a



EXECUTIVES OF SOUTHLAND PAPER MILLS (left to right):

Top row: WALTER L. McHALE, Mill Manager, and Dr. CHARLES H. CARPENTER, General Superintendent.

Middle row: GRADY PICKETT, Paper Mill Supt.; MELVIN E. FARRIS, Pulp Mill Supt., and D. C. EDMISTON, Power Plant Supt.

Lower row: T. C. McDONOUGH, Purchasing Agent; C. C. PORTER, Chief Chemist, and A. E. DREW, Chief Engineer.

year; the St. Helen's Pulp & Paper Co., St. Helens, Ore., for two years; Southern Advance Bag & Paper Co., Hodge, La., for five years, and Brown Paper Mill Co., West Monroe, La., for four years.

Grady Pickett, the paper mill superintendent, has headed that department for some time.

Other operations and management executives are D. C. Edmiston, power plant superintendent; T. C. McDonough, purchasing agent; C. C. Porter, chief chemist; A. E. Drew, chief engineer; H. A. Cooke, chief electrician; R. E. Ferguson, master mechanic; H. A. Maas, woodlands manager; N. T. Berquist, finishing superintendent; J. A. Hinson, personnel manager, and George Johnson, safety supervisor.

Operations personnel of the pulp and paper mills at Lufkin total 550 persons. The technical department has a staff of 32, including testers and clerks. There are five in the engineering department.

A recent honor which came to the Southland mills, and which should be mentioned here, was the winning of the 1945 safety award in competition with all Texas industries. This testifies not only to the excellent safety practices at Herty but is a credit to the pulp and paper industry as a whole, as the mill won out over all kinds of plants and operations in the largest state in the Union.

Power Plant

In a big operation such as the one at Herty, the power plant is an institution in itself. The recovery plant of the mill also must be calculated in this department to arrive at a balance. The arrangements and functions of the power equipment used is of particular interest. This is illustrated in accompanying pictures and a diagram.

The Southland power plant is large, has ample daylight lighting, and has a well maintained appearance. Equipment includes three Foster Wheeler Corporation boilers of 600-lb. pressure, 750 degrees Fah. temperature, steam serving two General Electric turbo-generators 7500 KVA, 2300 volt, 60 cycle, 3600 R.P.M. extraction condensing units.

Electrical energy is also developed by a 4000 KVA, 1800 R.P.M. Westinghouse turbo-generator which is serviced by a Babcock & Wilcox 200-lb., 500-degree Fah. steam boiler.

The boiler capacity is completed by one 600-lb. pressure, 750-degree Fah. spray-type recovery unit, made by Combustion Engineering Co.

VIEW OF FOSTER WHEELER CORP.
(165 Broadway, New York 6) equipment at Southland Mills.

1.—Construction view of three steam generators. When photo was taken, tubes were all installed. Handhole plugs and safety valves were in place on two units. Brickwork for bark-burning Dutch oven on left was under way.

2.—Later view — three steam generators completed. Two are for gas fuel and the third may be fired either with gas or with bark-burning Dutch oven. Wood hopper and Hofft oven are shown at extreme left. Alternate gas burners are ingeniously arranged at side of the furnace (see diagram on next page.)

3.—A view of condenser is shown from the water box end. The steam jet air ejector is at left. Centrifugal circulating pump is at right. The condenser shells are of all-welded construction and designed for effective distribution of steam over entire tube surfaces.

Natural gas is used for fuel throughout except for the recovery boiler.

The three Foster Wheeler steam generators are two-drum D type units with pendant convection superheaters, vertical tubular air heaters, and completely water cooled furnaces. Steam is generated at an operating pressure of 600 lbs. psi., as stated above, and the maximum designed capacity of each unit is 76,000 lbs. per hour.

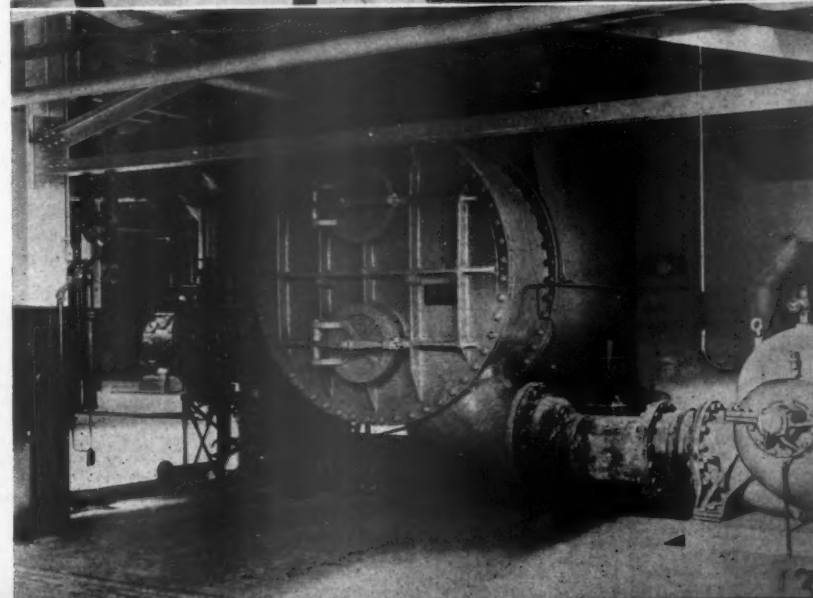
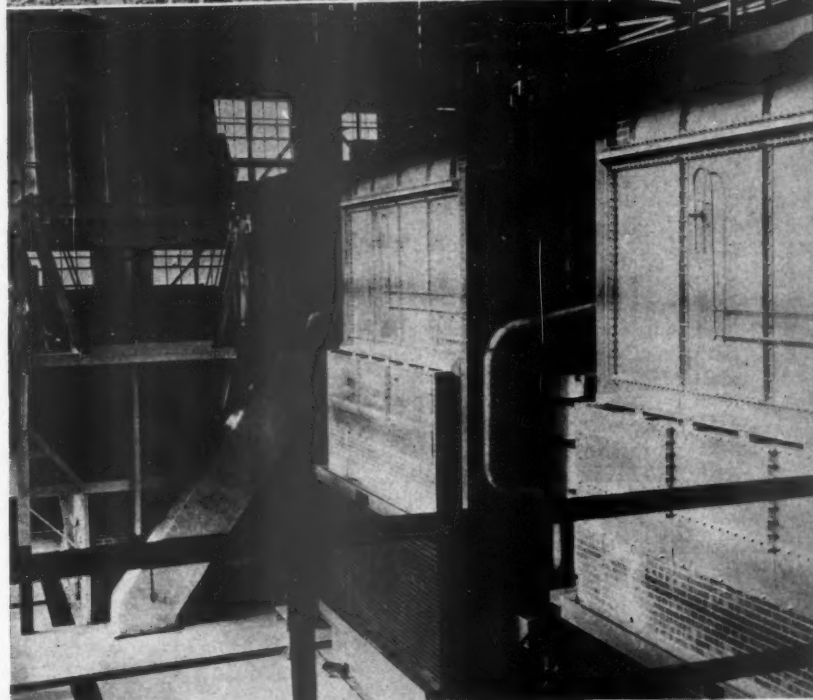
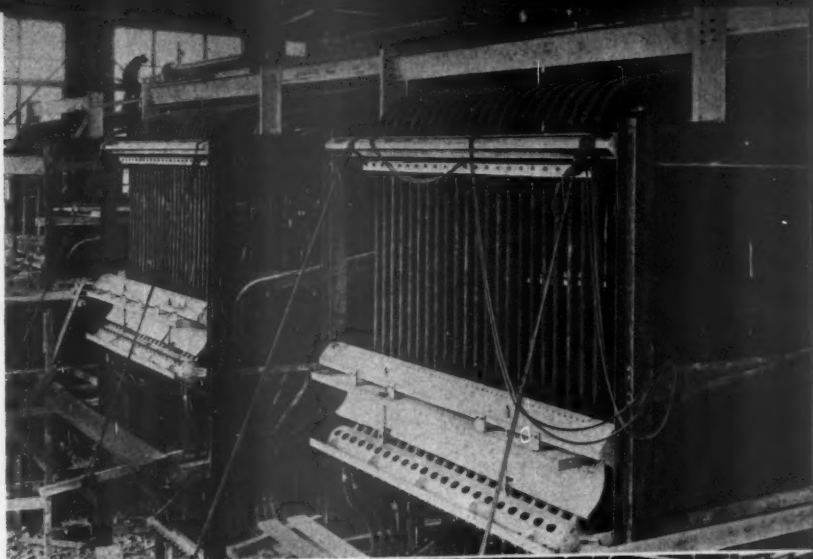
Each main furnace is designed for an auxiliary wood-burning furnace at one side to burn pine bark, waste and refuse from the mill.

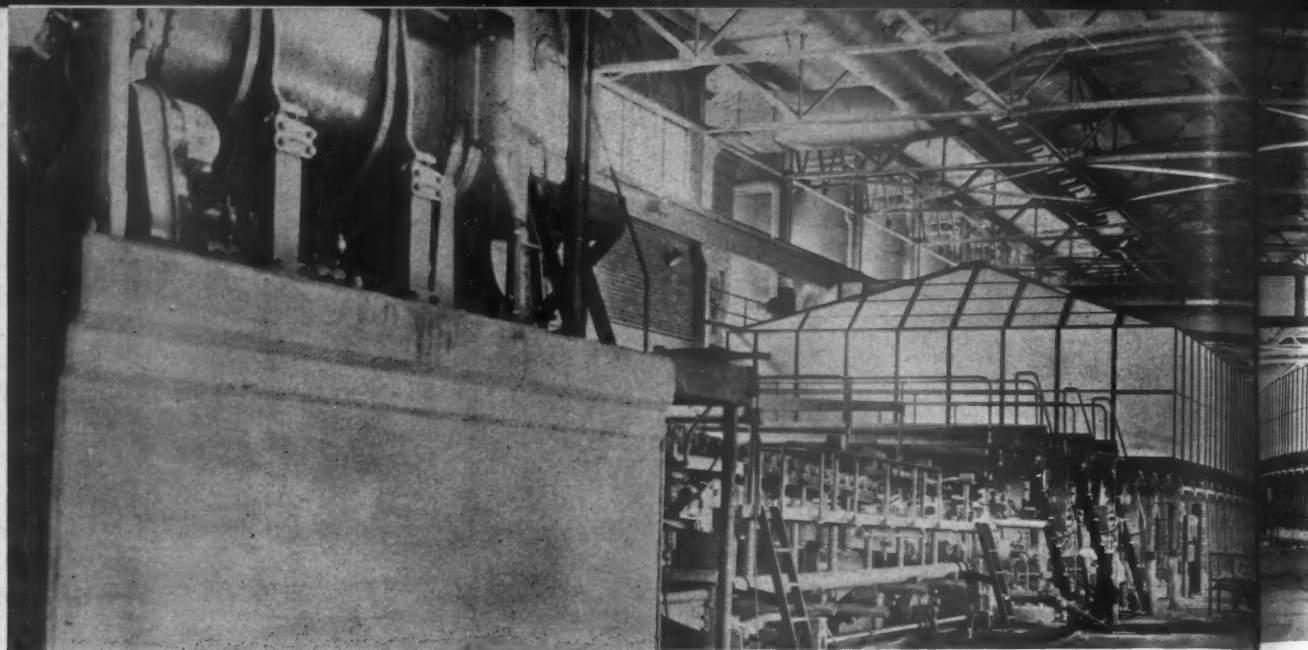
The steam generating equipment, according to mill officials, has met design requirements and surpassed them in several respects. Total draft loss was 25% better than expected.

Design conditions when firing natural gas only for each unit follow:

Steam capacity, lb. per hour..	76,000
Pressure, lb. psi.....	650
Final steam temp., superhtr. outlet, °F.	750
Feedwater temp., °F.	250
Air temp. entering preheater, °F.	80
Air temp. leaving preheater, °F.	295
Gas temp. leaving air heater, °F.	430
CO ₂ at boiler exit, %.....	10.1
Total draft loss, inches H ₂ O..	4.06
Fuel burned, cu. ft., per min....	110,000
Furnace liberation, Btu. per cu. ft.	31,800
Efficiency, %	79.90

Each turbine is mounted directly above a Foster Wheeler direct-flow surface condenser, connected to it through a copper expansion joint. The condensers are arranged for two passes with non-divided water-





IN NEWSPRINT ROOM AT LUFKIN—the only one in the South—the stock passes through Bird screens to Pusey & Jones 234-inch stream flow Fourdrinier machine (trim 221 inches). Here is general view of machine fed by Pusey & Jones stream flow equipment and showing the first Rapitrape type of Fourdrinier installed in the industry ahead of presses and driers. Drier hood is equipped with J. A. Ross ventilating system. See photograph on next page.

box; each contains 6550 sq. ft. of Arsenical copper tubes, 20 feet long and expanded into tube sheets at both ends. Steam jet air ejectors and centrifugal circulating and condensate pumps are also provided.

In some of the pulp and paper industry locales in the South, especially in Texas, there is an abundance of natural gas fuel.

Wood Supply

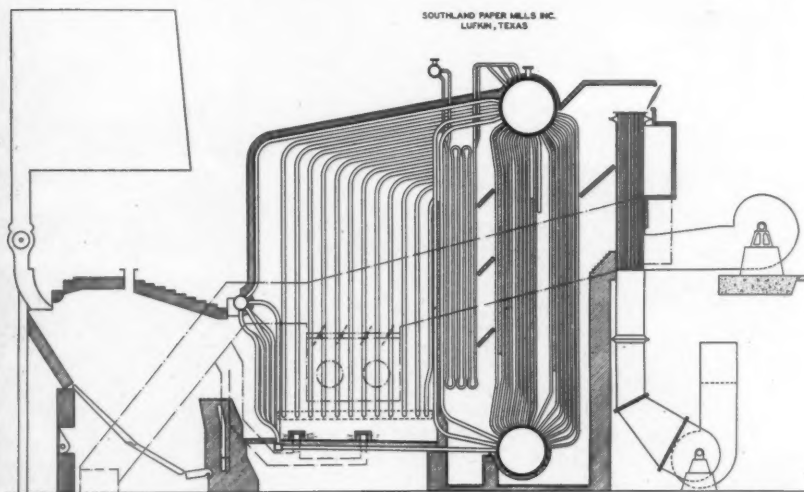
In the last issue (July) of **PULP & PAPER INDUSTRY** the program of pulp and paper industries and the U. S. Forest Service to establish permanent wood supply for forest products in East Texas is discussed at some length.

An adequate all-time supply of pulpwood is assured the plant from over 100,000 acres of fast-growing

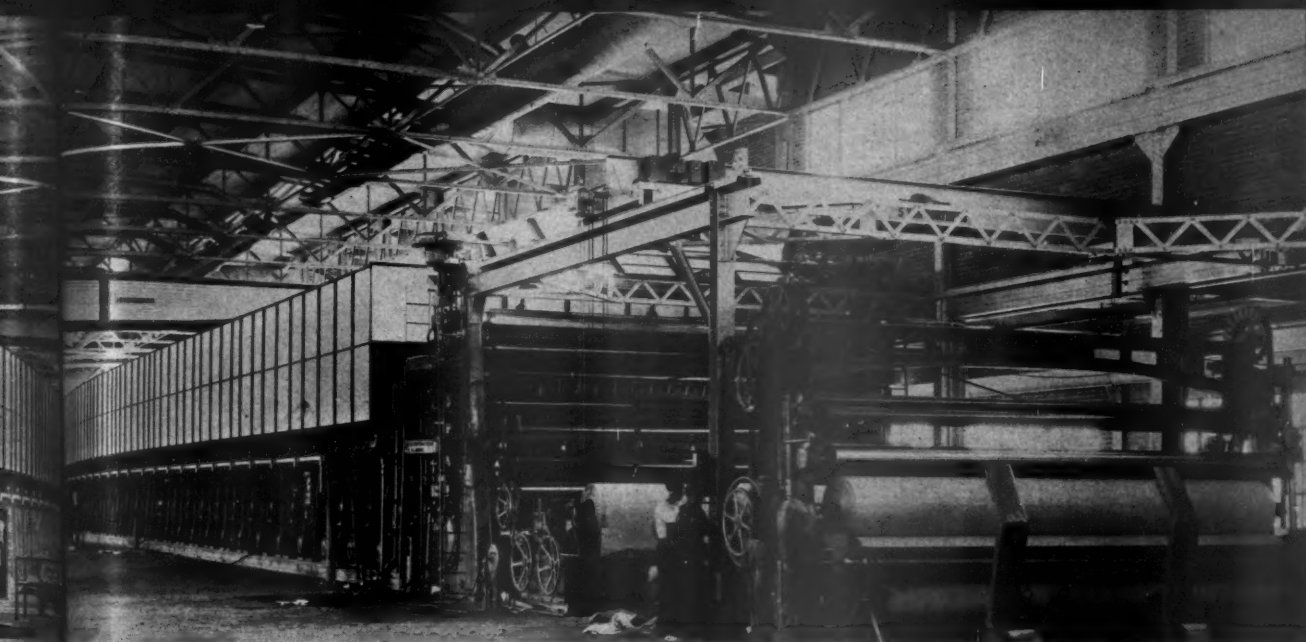
pine forest land on which modern proved methods of forestry are practiced. However, company officials have followed an expedient policy of purchasing most of the plant's needs from farm woodlots and other non-industry land owners so as to create a year-round cash crop market not previously available. About one-half the pulpwood is brought in by train and half by truck from a 30-mile radius distance from the plant. The plant consumes about 500 cords daily of which approximately 30% is ground and 70% chipped. Reserve stocks are corded up along railroad tracks or in the woods.

In the Gulf states where the coastal plains with their flat prairies and long leaf pine flats yield to the rolling hills of the uplands there begins the red and yellow permeable clay sub-soils that have ever proven susceptible to prolific growth. It is in these easy rolling hills and bottoms that the young fast-growing pine thrive in thickets "like hair on a dog's back."

Centrally located in an area in which man has cut and re-cut the fast growing forest, Lufkin rightfully prides itself as a leading industrial community in East Texas. There are lumber mills east, west, north and south of Lufkin that expect to operate indefinitely on the basis of forest lands the management of which is on sustained yield



Two of Foster Wheeler boilers at Southland are for gas fuel whereas the third may be fired either with gas or with the bark burning Dutch oven. The drawing shows the ingenious arrangement. Gas burners are at the side of the furnace and the Dutch oven is shown at left. Between the Dutch oven and the furnace proper is a series of slag screen tubes, widely spaced, to permit passage of gases from Dutch oven into the furnace proper. Preheated air is supplied by forced draft fan through vertical tubular air heater, shown at right, and a duct to space below oven grates.



THE OTHER END OF SOUTHLAND'S FOURDRINIER MACHINE—At extreme end is Cameron Machine Co.'s winder and rewinder equipment and ahead of it is the Pope type uniform speed reel. This paper machine has a maximum speed of 1500 FPM and is driven by a General Electric sectional motor. Either newsprint or standard kraft wrapping paper can be made here. Dryer part has one 42", six 48" and 48-60" dryers.

cutting.

When the question rose as to what area and what leadership would come forward in the major investment required for a newsprint mill, based upon pilot plant and laboratory experiments, it was the Texas spirit that came forward.

While the mill site itself is called Herty, there is no village there. Instead, the employees are drawn from all parts of Lufkin and Angelina County itself so that in its operation—from forest to newsprint—it is an expression of East Texas itself.

Groundwood Preparation

All of the wood goes through a Manitowoc single barker drum. The best pieces, with fewer knots, are taken from the sorting belt and thrown on a conveyor to the grinder room. Here a distributing conveyor (picture) takes the wood to four lines of grinders, each operated by a 4000-H.P. Electric Machinery Co. motor. Eight two-pocket Great Northern 4-foot wood grinders perform the service (picture on page 21).

Voith coarse flat screens are used to remove slivers, and the stock passes through five Impco and two Waterous fine screens, and four Impco thickeners.

Other equipment to complete preparation of stock includes two Valley Iron Works Vortex beaters and seven E. D. Jones jordan, the latter powered by Electric Machin-

ery Co. units.

A Trimbley Machine Works proportioning and metering unit mixes the sulphate and groundwood for newsprint, the ready stock going into a tile lined surge chest.

Ceramic tile linings of the plant throughout were by Stebbings Engineering and Mfg. Co., Watertown, N. Y. Description of the newsprint and fourdrinier room operation is given at the end of this article.

Sulphate Pulp Preparation

After 4-foot pulpwood for the grinders is selected from the sorting belt, the remaining pieces are used in the sulphate mill. They go by conveyor to a Murray 100-inch four-knife chipper, Rockwood drive. Chips are screened by two Rotex heavy duty screens manufactured by the Orville Simpson Co., and reject pass through a Murray chip crusher before being fed into the accepted chips. Sawdust is blown back into the bark for burning.

The accepted chips fall into a steel flight conveyor and pass to an outside storage tank that has a capacity of 18 cooks. Electric vibrators feed the chips from storage to a rubber belted Jeffrey conveyor system.

The three digesters of 2750 cu. ft. each were made by the Chicago Bridge & Iron Co. Each digester yields eight tons of air dry pulp. Customary measuring tanks are pro-

vided for white and black liquor. Each digester is equipped with a liquor circulating system which draws from the middle and returns the liquor to top and bottom. A central control board reflects all factors in the digester operation.

An outside 3-cook blow tank is connected with the heat recovery system from which the hot water is used in the wash room, caustic house and bleach plant.

Recovery

The recovery unit of the mill has been mentioned in the previous description of power plant, in which it must, of course, be reckoned.

Here is some of the most recent equipment available to the growing kraft industry. This equipment is illustrated in accompanying pictures.

Evaporation is carried out in a Goslin-Birmingham four-body quadruple effect, long tube, vertical evaporator train. The usual backward feed is employed as in all black liquor evaporators. In order to conserve water, a surface condenser is employed to maintain vacuum, instead of a barometric leg. Steam at the onset of the process is at 30-lb. pressure. (Photos on page 25).

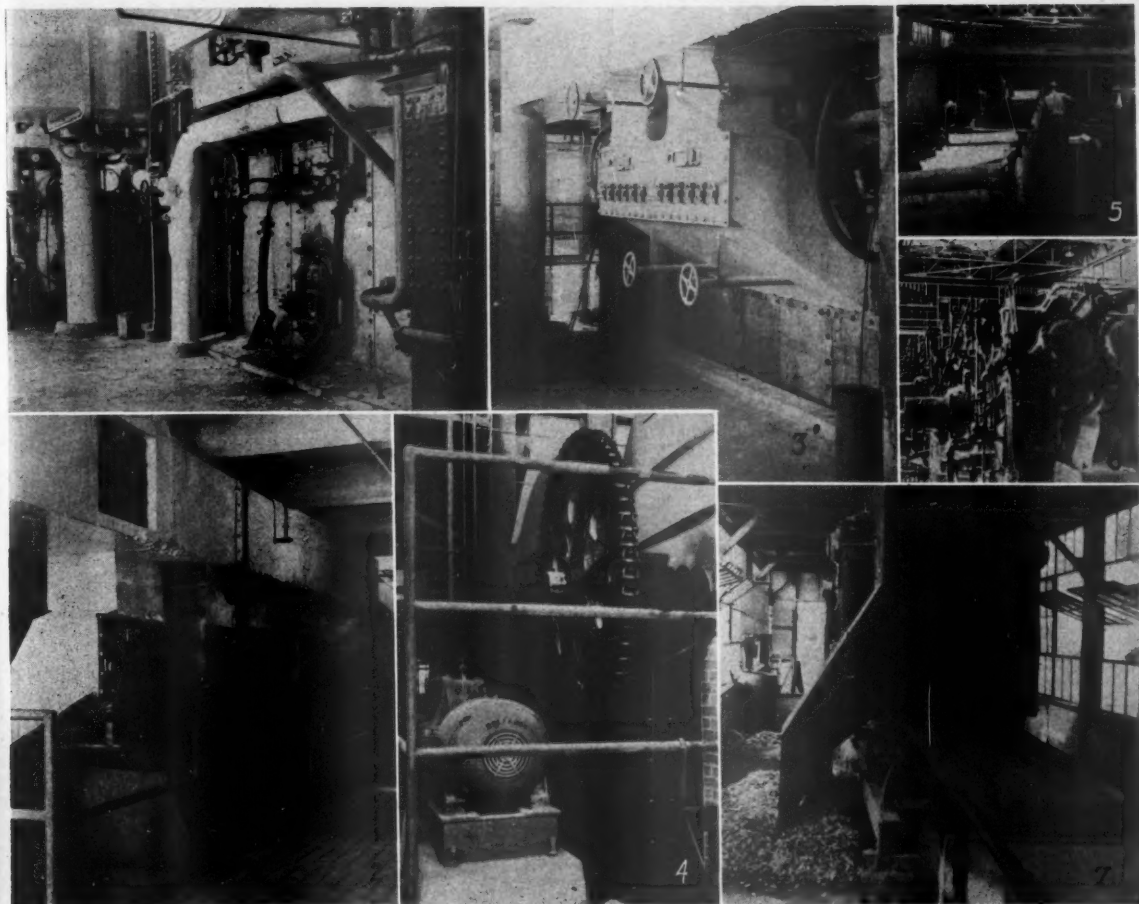
Cooling water for the condensers is picked up from the gravity header supplying the newsprint mill, pumped through the condensers and into a gravity header supplying the pulp mill and bleach plant.

Water for the plant is furnished from five deep artesian wells having

PULP

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PAPER



THE RIGHT HAND GROUP OF PICTURES ARE VIEWS OF THE SPRAY-TYPE RECOVERY UNIT MADE BY COMBUSTION ENGINEERING CO. (200 Madison Ave., New York) for the Lufkin mill, and auxiliary equipment.

1—Front view of boiler which has 70,000 lbs. per hour capacity of 600 psi 730 degrees Fah. steam.

2—Side view. 3—Back view. 4—Reliance Electric & Engineering Co. (1088 Ivanhoe Road, Cleveland) motor which operates D. J. Murray Manufacturing Company gear, driving two Combustion Engineering disc-type evaporators. The latter lower moisture before the reduction boiler and utilize flue gas from the boiler. A considerable number of Reliance motors are used at Lufkin.

5—Pulpwood conveyor to grinders. 6—Great Northern grinders. 7—Jeffrey Manuf. Company unit is shown feeding chips to the conveyor to the digesters. This operation powered by General Electric motor.

A southeastern mill manager who has both Combustion Engineering and other recovery equipment commented to PULP & PAPER INDUSTRY that in chemical recovery and steam generation the C-E Units are on a par with other similar equipment but have demonstrated advantages in requiring less maintenance. He praised highly longevity of the C-E unit's operation.

a daily flow of ten million gallons. No water treatment is effected.

Condensate black liquor is pumped from the hot well of the condenser to the sewer in conventional manner. Further evaporation is carried out in two Combustion Engineering Co. disc-type evaporators which utilize flue gas from the recovery boiler.

Recovery of soda is carried out in a Combustion Engineering recovery boiler. Approximately 70,000 pounds per hour of 600-lb., 750 degree Fahrenheit steam is generated by the boiler. It is equipped with an automatic furnace pressure control and automatic liquor temperature and level controls. Am-

meters on the motors driving the cascade evaporators indicate liquor density. The boiler operates entirely on organic matter. Molten soda ash from the furnace runs into a 20,000-gal. dissolving tank which is operated continuously and which feeds green liquor to the raw green liquor storage tank.

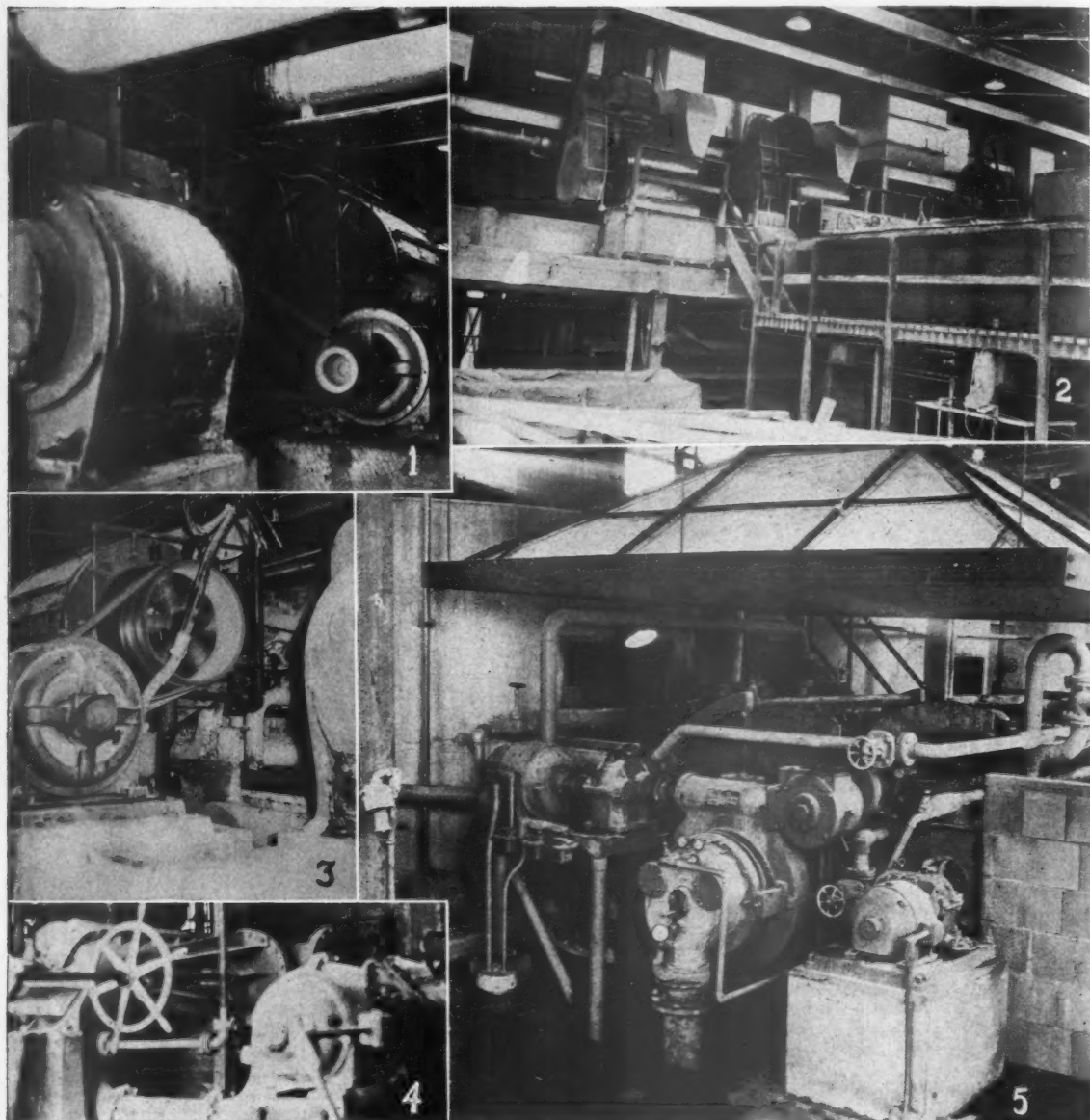
Recovery is 94½% and the chemical reduction runs between 90 and 93%.

Liquor Make-Up

The liquor make-up plant, principally equipped by The Dorr Co. is of particular interest because of the fact that it has a combination thickener which eliminates the use of a filter, which would have re-

quired more watching and checking. A new Dorr feature is the white liquor clarifier and washer in combination in one unit. Photographs of Dorr equipment are on page 24.

Raw green liquor from the storage tank (following recovery) is fed to a four-compartment Dorr Combination Green Liquor Clarifier and Dregs Washer. A recording and controlling flowmeter governs the rate of flow of green liquor through the system. The clarified green liquor flows by gravity through a heater to the lime slaking step, which is carried out in a Dorrco Slaker, which also takes out grit. The classified milk of lime then flows by gravity through three Dorr



VIEW OF IMPROVED PAPER MACHINERY CO. (Nashua, N. H.) washing, screening and bleaching equipment at Lufkin.

1, 2, and 3. Views of Impco screening and vacuum equipment. Stock from diffuser tank goes through a three-stage counter washer.

4. View at first stage of three-stage bleach plant. Here is Gould pump and chlorine flash mixing chamber at the base of the first tower. Brown pulp drops to pump, passes through mixer, where mixing is effected with rotameter, and passes into tower base.

5. After rising to top of first tower, pulp drops into the Impco washer shown here with Reliance motor. This stage and two additional stages of bleaching are outlined in another illustration—a blowsheet.

causticizers in series and thence to a pump where the causticized slurry is picked up by a Worthington pump and sent to the White Liquor Clarifier and Mud Washer. This unit is a six-compartment Combination Dorr Tray Thickener, arranged for clarification of the white liquor in the two upper compartments, operating in parallel. The mud gets four washes in the four

lower compartments, which are arranged to operate in series.

The washed mud from the bottom compartment goes to a storage tank from where it is pumped directly to a horizontal eight-foot diameter by 150 feet long lime burning kiln. As previously explained, a point of special interest is the fact that the conventional lime and filter ahead of the kiln has been omitted and

that the washed sludge is fed directly to the kiln without benefit of filtration. The kiln is fired with natural gas. A rotating Fanmix burner holds the air-gas ration almost constant at different rates of firing.

Control instruments on a Foxboro control board for the Dorr recausticizing plant include controlling and recording flowmeters for



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at lower installed
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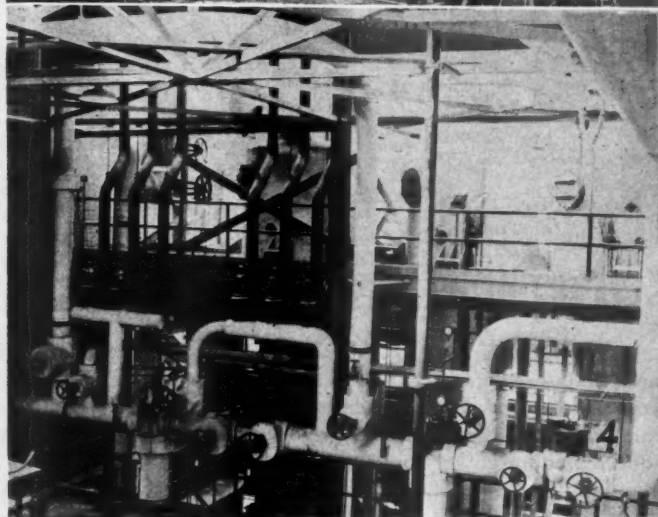
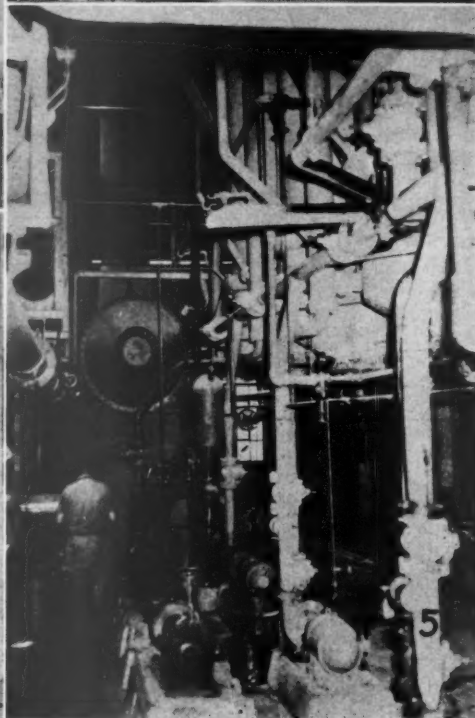
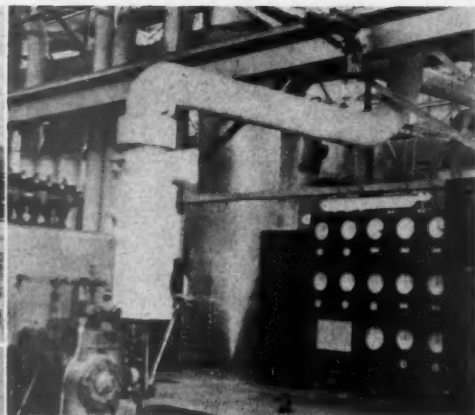
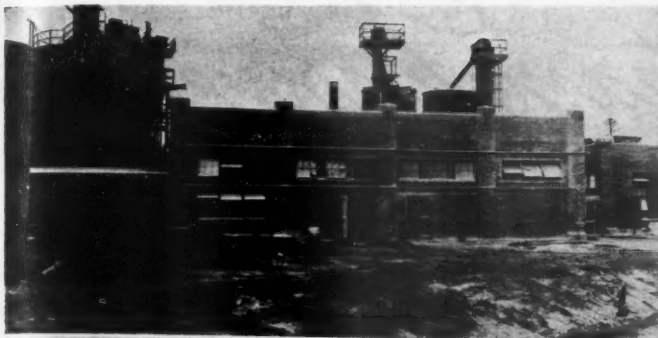


Improved **PAPER MACHINERY CORPORATION**
NASHUA, NEW HAMPSHIRE



EQUIPMENT IN CAUSTIC HOUSE AT SOUTHLAND PAPER MILLS. A new and more efficient combination operation developed by The Dorr Co. is described in accompanying article under heading, "Liquor Make-Up."

1. At left is degritting section of Dorrco lime slaker. At right, causticizers or reaction tanks—tops showing. 2. Another view of Dorrco slaker, taken from slaking compartment, looking toward degritting section. Driving head for slaking compartment at lower right. 3. Liquor tank with Westinghouse unit. 4. View of slaker from degritting section (opposite point of view to Photo 2). 5. Control board by The Foxboro Co. (Foxboro, Mass.) See article for explanation of functions (this board also appears in background of Photo 3). 6. and 7. Most of the six pumps in Caustic house made by Worthington Pump & Machinery Corp. Also shown are Westinghouse Electric Corp. motors.



VIEWS AT SOUTHLAND PAPER MILLS:

1. New Caustic House, which includes some of the latest liquor make-up equipment produced by The Dorr Co. (570 Lexington Ave., New York), described in this article. Indoor pictures in the Caustic House will be found in another group of pictures. Entrance is through the open double-doors. On entry, one faces the mezzanine gallery on which is the lime slacker. A clarifier is shown in left of the picture.

2. In the Power House, showing Westinghouse Electric Corp. turbo-generators. The control board is at the right in the picture.

3. Woodyard and wood conveyor. Sulphate mill storage tank at right.

4. and 5. Views from lower and upper floor of the evaporator installation by Goslin-Birmingham Mfg. Co. (350 Madison, New York). This is in the Recovery department. Evaporation is carried out in a Goslin-Birmingham four-body quadruple-effect, long tube, vertical evaporator train. Backward feed is employed.

green liquor and hot wash water, recording and controlling temperature meter after slaking, recording density meters on green and white liquor, showing Baume, and liquor level gauges on all storage tanks.

Washing and Screening

Now, to follow the continuity of stock in the sulphate mill, we must

return to the digester operation. The brown stock from the diffuser tank now goes to a three-stage counter washer made by Improved Paper Machinery Co., Nashua, N. H. The bleach plant, described later, is also Imcco-equipped and designed.

In the washing stage, each washer is equipped with an A-C, D-C drive by which the speed of the washer

is controlled by rheostat.

A control panel holds recording flowmeters for wash liquor in each stage tank and evaporator feed storage, as well as all electric switches. Stock from the third stage washer drops into a tile-lined, washed stock chest.

The washed stock is pumped from the chest to a combination

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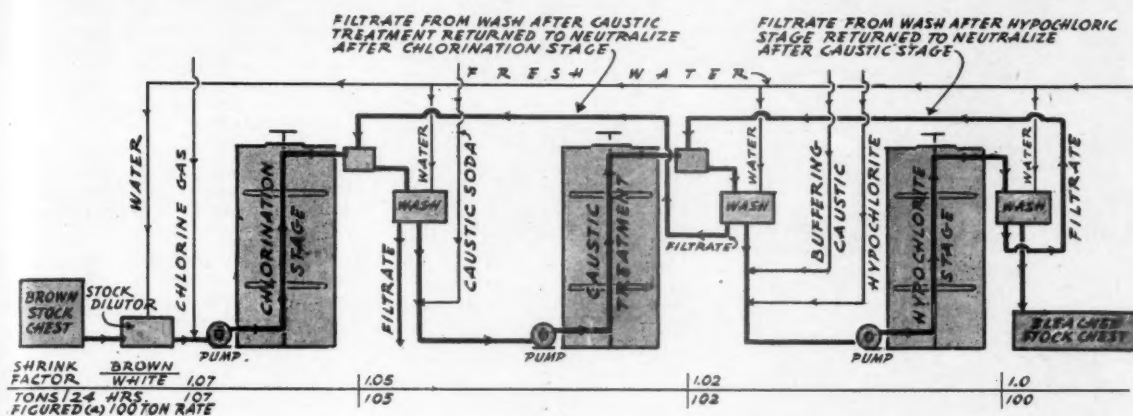
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FLOW SHEET OF SOUTHLAND PAPER MILL'S NEW BLEACH PLANT



Above is a graphic simplification by PULP & PAPER INDUSTRY's artist of the more complete and exact flow diagram issued by Improved Paper Machinery Corp. for its standard three-stage low density continuous bleachery. Note that shrinkage is figured at 100 tons per day capacity whereas the plant at Southland Paper Mills actually has a 50-ton capacity. At a 100-ton rate, Impco calculated the water balance (disregarding chemicals, condensate and sealing water) as follows: Water in, 2368 GPM; water out, 2396 GPM; stock in, 444 GPM; stock out, 416 GPM.

Impco consistency regulator and stock meter. After dilution, it feeds by gravity to two Impco knotters where the coarser rejects are eliminated.

The stock feeds by gravity from the knotters to five Impco fine primary screens, thence through a single Impco decker to two tiled screened stock chests. The second chest is connected with the first by a 36-inch equalizer line.

The screened stock is pumped (1) to the bleach plant, or (2) to the cylinder machine chest, or (3) to the wet lap machines.

The black liquor filtrate from each washer goes to its own stage tank, liquor in storage there being recycled to the washers in customary counter current procedure. The first stage washer's tank is compartmented, with outside foam vents leading from the lower to upper compartment where a steam shower reduces the foam to a liquid that drains back into the lower compartment. Second stage liquor is used for fill back in the digesters. The evaporator feed storage tank is maintained by liquor from the first stage foam tank. First stage liquor is also used for the blow tank dilution. The black liquor system is entirely closed, the soda content of the washed stock and soda loss up the recovery boiler stack constituting the only soda loss.

Bleach Plant

Brown stock enters the bleach plant through an Improved Paper

Machine Co. combination consistency regulator and stock meter for treatment in three acid-proof tiled eight-ton (air dry) pulp towers. (Ceramic lining by Stebbins Engineering and Manufacturing Co.) A flow sheet illustrated description of this 3-stage, 50-ton low density continuous bleach plant accompanies this article.

The brown pulp drops to a Gould pump at the base of the chlorination tower and then passes through a mixing chamber where flash mixing with gaseous chlorine is effected with a rotameter. It passes into the tower base, rises to the top, overflows, and drops into an Impco washer.

The chlorinated pulp then drops again, this time for mixing with caustic and is forced into the base of the second tower by an Impco side entrance pump. After rising again and passing through an Impco washer, it drops to the third stage where it is mixed with sodium hypochlorite and another Impco side entrance pump moves it into the tower. After final washing through an Impco unit the pulp goes to the bleached stock chest from which the requirements of the newsprint mill are drawn. Storage is as slush.

The towers are reinforced concrete. Pumps are motored by GE.

Kraft Paper Mill

Pulp from the sulphate plant enters the kraft mill through two jordan refiners which are powered

by Electric Machinery Co. units. The balance of the equipment consists of a five-vat, 124-inch Moore & White cylinder paper machine which produces kraft board or dry pulp rolls. The unit now produces high test ammunition board, being one of three plants in the South from which the Army obtains this highly important item. It is run at the rate of 150 feet per minute.

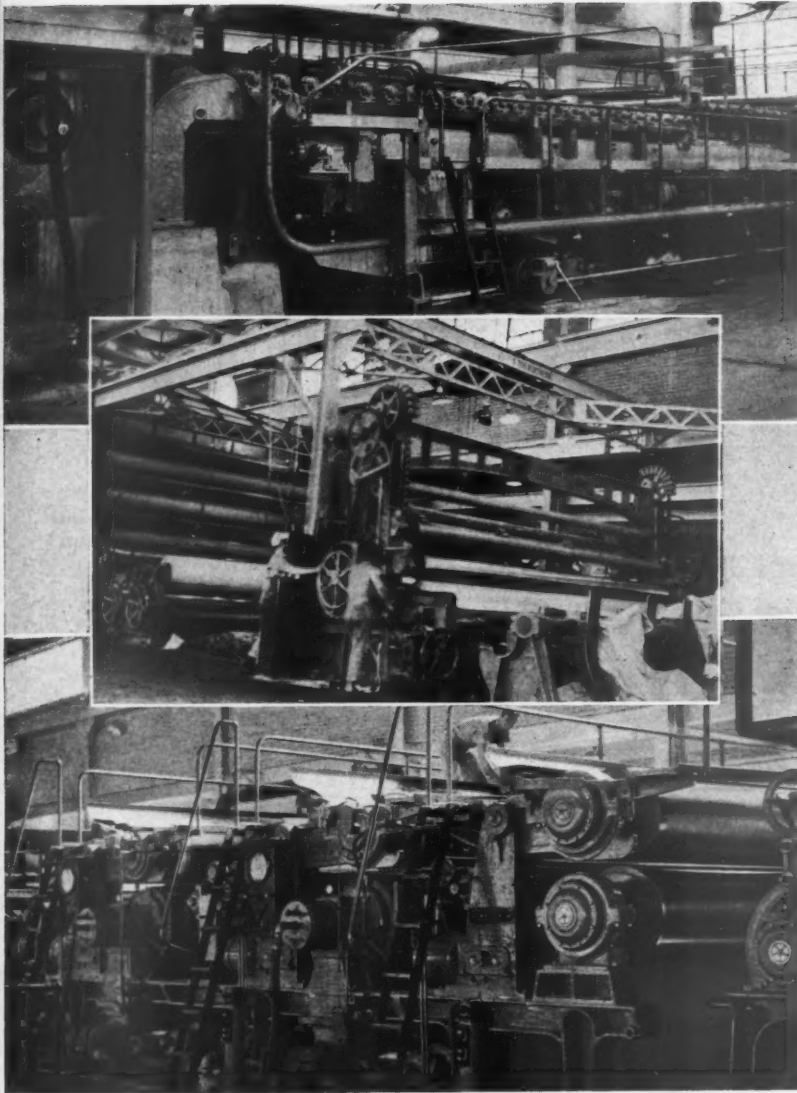
A similar operation at the Chickasaw Mills of Hollingsworth & Whitney Co., Mobile, Ala., was described in the March, 1945, issue of PULP & PAPER INDUSTRY. The other Southern mill making ammunition board is Florida Pulp & Paper Co., Pensacola, Fla.

The finished ammunition board at the Southland mills is handled in a similar manner to newsprint, but is sent to a separate storage and shipping dock.

As a war expedient, the plant produces and ships wet-lap from two machines, one of which is an Impco. It is probable that this will be discontinued after the war because the shipment of a 60% moisture content as against 20% dry pulp is uneconomic.

Fourdrinier Room

In the fourdrinier room the stock passes through Bird screens and thence to a Pusey & Jones 234-inch stream flow fourdrinier (trim 221 inches). The two single press sections, the 48 drier unit, single calendar stack and reel are also Pusey



(Above) Fourdrinier part of Pusey & Jones machine at Southland Paper Mills. This was the first installation of the "Rapidrape" type of Fourdrinier. It is suitable for wire 234" wide, 90' long.

(Inset) Cameron Machine Co. size 20 winder and rewinder on the end of the machine. In background (left) are Pope reel and 8-roll stack calenders.

(Below) Closeup of press section of the same machine. Here are two suction presses and one plain or smoothing press.

& Jones. The installation is completed with a Cameron Machine Co. Type 20 winder and rewinder and a Vandecarr slicer.

The installation is high speed. Newsprint is made at the rate of 1330 feet per minute. The machine is General Electric powered. Either newsprint or standard kraft wrapping paper can be produced.

The drier hood is equipped with a J. A. Ross Engineering Co. air system.

Paper is wrapped as it comes from the Camachine, and is scaled before sent down to storage and shipping

deck by a special paper roll elevator. The plant has storage capacity for 1000 tons of finished product. Shipments are principally by rail, with limited movement by truck to nearby points. Cars spotted on the spur track at the loading dock are loaded with aid of Elwell-Parker electric lift trucks.

Adjoining the fourdrinier room is a large completely equipped machine shop for maintenance work.

The fourdrinier machine has a capacity of 330,000 pounds of newsprint each 24 hours. Distribution is through Perkins-Goodwin Co.,

FOR A MODERN PULP AND PAPER MILL, many specializing manufacturing companies combine to furnish the necessary equipment. On the opposite page are shown a few of these products which help to make a successful operation at Southland Paper Mills: 1 and 2. Views—from two angles—of refiner for kraft machine made by Emerson Mfg. Co.

3. Jordans made by E. D. Jones & Co. (Pittsfield, Mass.), and powered by Electric Machinery Mfg. Co. motor.

4. Power unit with feather valves from Worthington Pump & Machinery Corp., Harrison, N. J. This serves dynamo in power house.

5. Dryer end of the 120-inch trim five-cylinder kraft paper machine supplied by Moore & White Co. (North Philadelphia). Air control hood is equipment of J. O. Ross Engineering Corp.

6. Voltex beater of Valley Iron Works (Appleton, Wis.)

7. One of two General Electric (Schenectady, N. Y.) turbo-generators in the power house.

8. Feed intakes and tops of the digesters. For this mill, digesters were made by Chicago Bridge & Iron Co. (332 So. Michigan Ave., Chicago 4).

New York, as sales agents. The company maintains a branch office in Lufkin.

Conclusions

However, scarcely one-third of the newsprint required in the area served by the Southland Paper Mills can be supplied by that mill, operating at full capacity. That is why Southern publishers are looking for another site. Meanwhile, the management at Southland can be expected to take into postwar consideration the full scope of sulphate paper possibilities, now that they have an improved set-up.

They undoubtedly have a sound future, with more of the necessary chemicals becoming available now that the war emergency is nearing an end, with a bounteous fast-growing wood supply and with the sympathetic as well as tangible and actual support of the state of Texas and its alert and forward-looking people.

The pulp and paper industry as a whole has extended a warm welcome to the Southland Paper Mills and already these operations have performed in a way that brings greatest credit to the industry.

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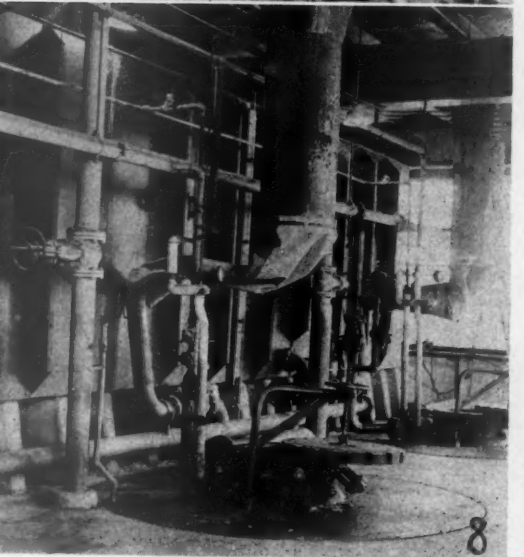
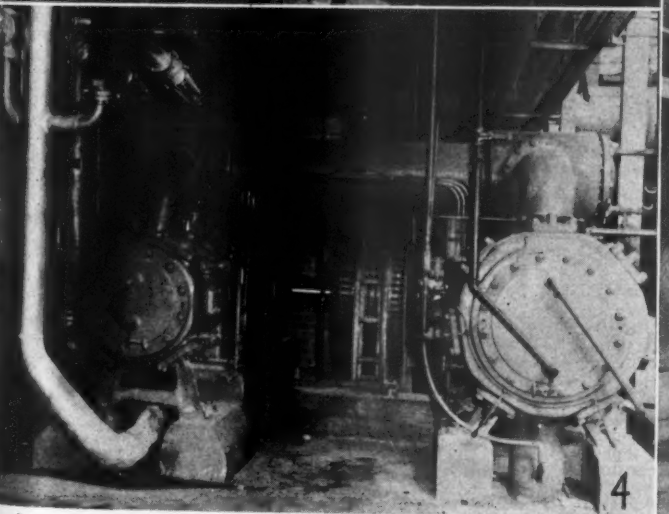
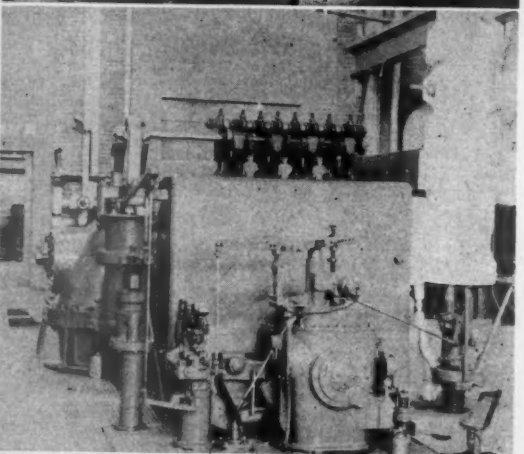
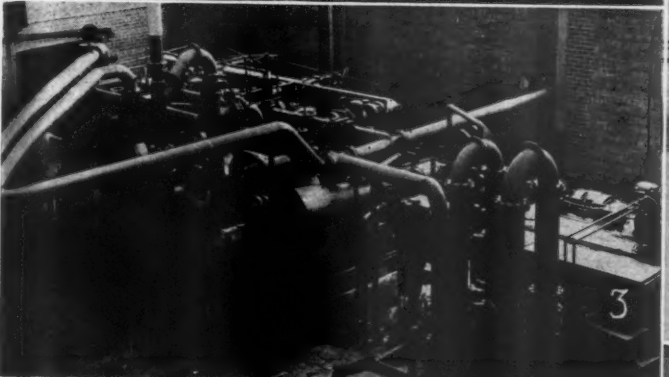
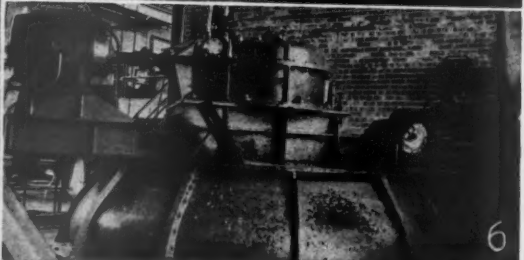
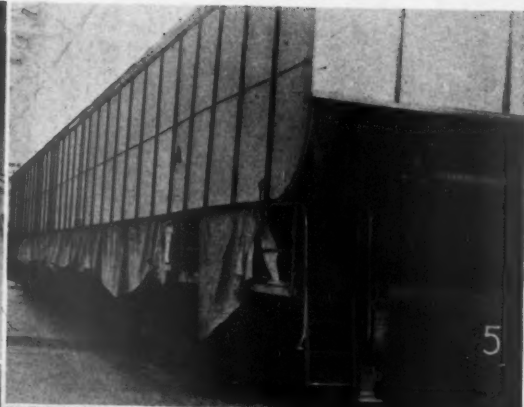
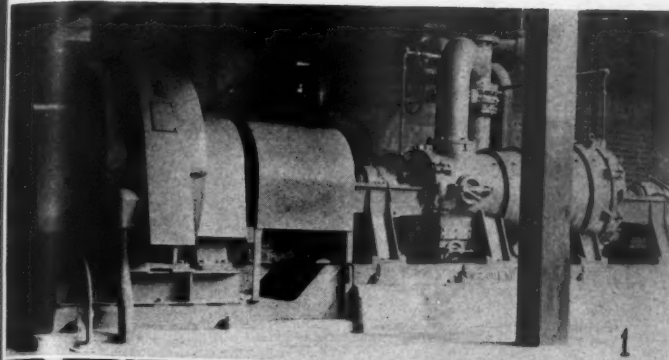
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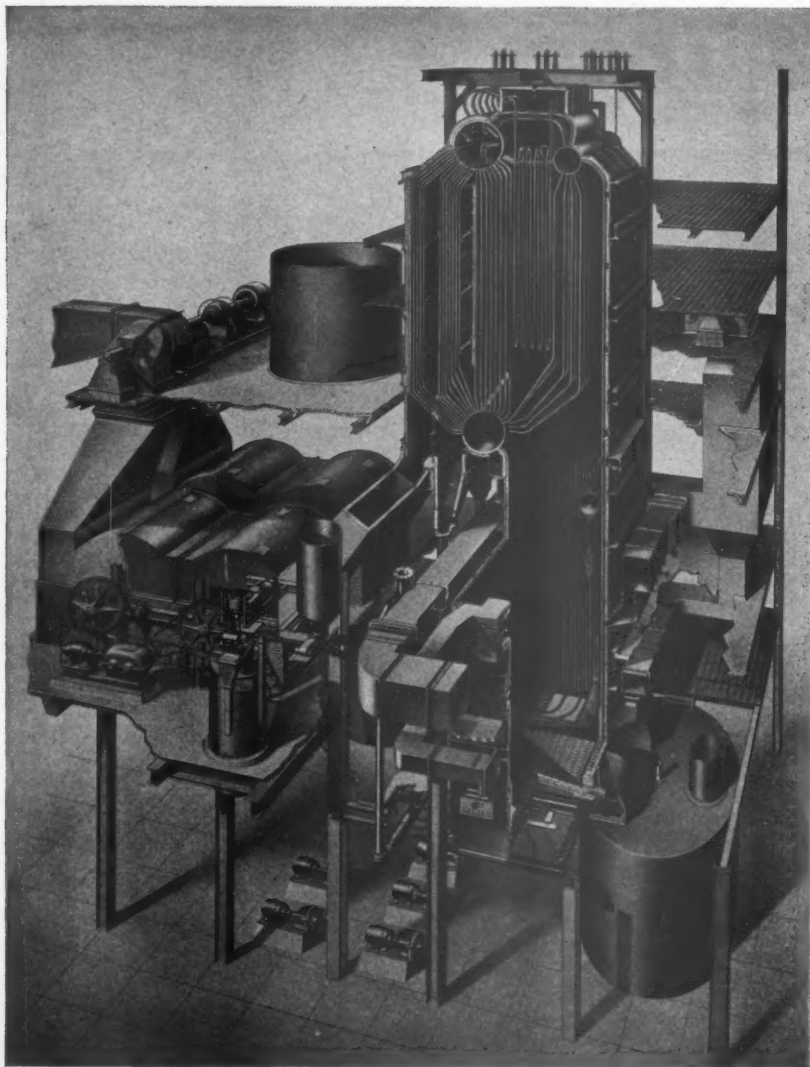
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A 3 WAY SERVICE



RECOVERY UNIT FOR SULPHATE MILLS

New standards of recovery performance in the sulphate field were introduced when the first installation of this C-E Recovery Unit was made. The design was right from the start. So completely satisfactory were operating results that none but minor detail changes have ever been found necessary in the 6 years that these units have been in service.

The C-E Recovery Unit has proved to be exceptionally reliable in service. For example—latest available

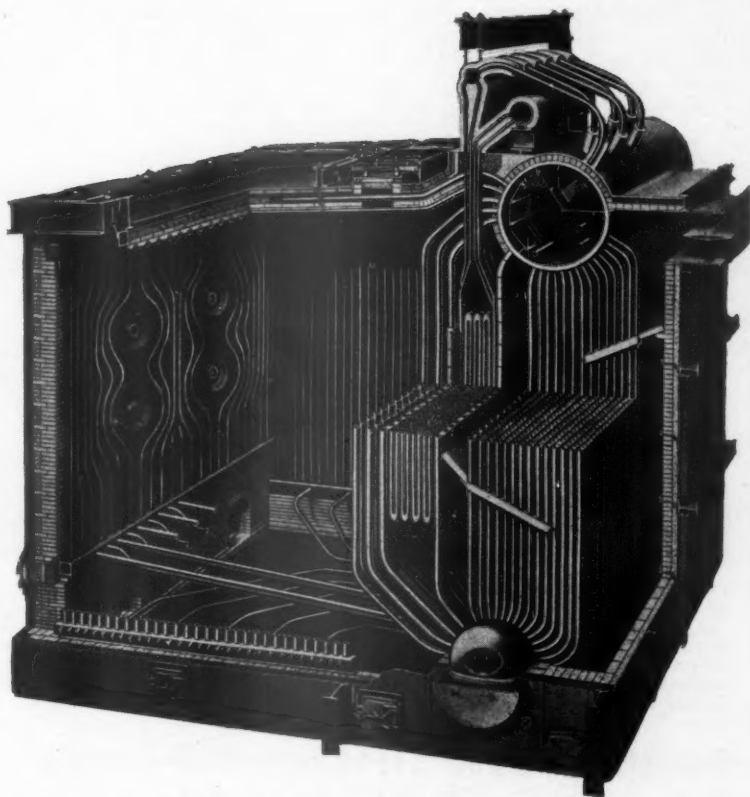
performance figures for the unit here illustrated show that it was actually in service 96.5% of all of the time for a period of 3 years. Nearly all of the 3.5% outage was scheduled outage. During that period this unit generated an average of 30% more steam than its rated capacity had anticipated.

C-E Recovery Units are in service and under construction in many of the best known paper mills in the United States and Canada.

E TO THE PAPER INDUSTRY

STEAM GENERATING UNITS

For all paper mill steam requirements from the smallest to the largest, the VU Unit has proved its suitability. A thoroughly standardized and time-tested design, it has achieved a reputation for dependable and economical service. VU Units are burning pulverized coal, oil, gas and combinations of these fuels; they have also been equipped with bark-burning furnaces. The VU-Z Unit, an adaptation of the VU design, is especially suited to stoker firing. Present installations in paper mills range in capacity from 20,000 lb of steam per hr, through relatively small increments, up to 225,000 lb. A unit of the latter capacity has been in service in the West Point, Virginia, Plant of the Chesapeake Corporation for more than a year. The aggregate capacity of VU Units in paper plants is 2,500,000 lb of steam per hr, a striking indication of the extent to which the paper industry has decided that this unit is the best answer to its steam generation problem.



DIGESTERS and PRESSURE VESSELS

Many C-E built cylindrical digesters of the type illustrated here, as well as others of the spherical type, are in service in the paper mills of North America. The extensive facilities of C-E Shops are available for the fabrication of many other types of pressure vessels employed in the manufacture of pulp and paper. These are built to your specifications by highly skilled personnel with extensive and diversified experience in this type of work. Consult C-E now on your post-war pressure vessel requirements.

A-467



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Sorg Will Nearly Double Steam and Power Facilities for Increased Production

Expansion of power plant facilities at The Sorg Paper Co., Middletown, O., in order to provide for increased production on all of the plant's paper machines, is announced by D. G. Driscoll, president.

War Production Board approval has been obtained for a new boiler

of 120,000 lbs. per hour capacity and 425 lbs. per sq. in. pressure. Also the WPB has approved accessory equipment, including a new feed water treating system.

The boiler will be fired with powdered coal furnished by two pulverizers supplying fuel to four burners. Automatic combustion control

will be used.

The feed water treating plant will be a two-stage system with hot process lime and soda in the first stage, followed by a phosphate stage.

A new 250-ton coal handling and storage system will also be installed. This will consist of conventional storage silo with automatic delivery and weighing of coal to both new and old boilers.

Contracts for nearly all equipment have been let.

J. E. Sirrine and Co., Greenville, S. C., are consulting engineers on the project, working with G. H. Suhs, chief power engineer of the Sorg mills.

The increase in production on all paper machines during the past several years has called for additional steam and power to such an extent that existing boilers were inadequate in capacity. The new 120,000-lb. unit and the present three 50,000-lb. units will not only provide adequate steam and power for maximum loads, but also reserve capacity that will make possible, at all times, proper maintenance of boiler and accuracy equipment.



FROM SOUTH AFRICAN PULP AND PAPER INDUSTRY came these envoys to visit the North American Industry.

Left to right: C. B. PEARCE, Manager for the Transvaal of John Dickinson & Co.; COLONEL J. J. KRUGER, Controller of Paper for the Union of South Africa; R. S. BAKER, Secretary of the South African Paper Control. Picture was taken during visit to Pacific Mills, Ocean Falls, B. C. They also visited Powell River.

Six-Stage Impco Bleachery Will Double Nekoosa-Edwards Bleached Pulp Production

Work is to begin immediately on construction of a new Impco six-stage bleach plant and a 3,600 GPM Inflico gravity filter plant for the Nekoosa-Edwards Paper Co., Nekoosa, Wis., according to a letter to PULP & PAPER INDUSTRY from Lee Turley, sales promotion manager of the Wisconsin operation.

Nepco will thus double the quantity of the bleached kraft pulp which it produces. Provision will be made so that eventually it can, if desired, full bleach its total capacity of 150-160 tons of sulphate pulp per day.

The new equipment and installations, an investment of \$500,000, will make possible production of 75-90 tons of full bleached pulp per day, and the remainder semi-bleached. This compares with present production of 25-40 tons full bleached, 55-60 semi-bleached and the remainder unbleached.

John E. Alexander, president, in an announcement of the project, said the equipment will increase strength and brightness of pulp and enable the company to expand production of kraft specialties.

Interesting as background to assure this future program are the timber ac-

quisitions of the past 15 years which have made it possible. The company is now in a position to utilize large stands of either pine or spruce in its pulp and paper mill.

Timber Acquisitions

The company has acquired, exclusively for its own use, four separate timber limits in Canada. These limits will provide several million cords of pulpwood, the greater share of which is spruce. The Canadian holdings will be operated by a new wholly-owned subsidiary company, known as the Alexander-Clark Timber Company, Ltd., with headquarters at Port Arthur, Ontario, Canada. With the large cordage of spruce pulpwood provided for, it will permit the cooking of spruce in far greater quantities than heretofore. The kraft pulp made from spruce pulpwood and then bleached in the new bleach plant will be used in the manufacture of various grades of paper where strength and brightness are of paramount importance.

In addition the company has, during the past year, acquired approximately 50,000 acres of cut-over pulpwood lands in Oneida County, Wisconsin, on which it will extend its reforestation program. On this area there is developing timber

growth to provide from twelve to fifteen thousand cords of pulpwood annually. The above pulpwood holdings, plus the extensive holdings the company now has within a radius of 25 miles of its mills, will in a comparatively few years provide the company with a steady source of pulpwood.

Acreage now owned in Wisconsin alone totals over 100,000 acres. Plantations established 15 years ago have trees ranging up to 9 inches in diameter breast high, some of which are 30 feet in height.

The new bleaching system will be furnished by the Improved Paper Machinery Corp. of Nashua, and will be housed in a building 68 by 72, with basement and four floors. The building housing the filtration equipment will be 52 by 75, with basement and first floor.

The filter plant, manufactured by the International Filter Co., Chicago, Ill., will have equipment and piping so that the plant may be extended at a future date, if needed, to a capacity of 8,400 gallons per minute.

The company is pumping water from Nepco Lake at the rate of approximately 38,000,000 gallons per day. The quantity of water consumed daily by Nepco is more than is consumed daily by some cities of 300,000 inhabitants.

Dorr Equipment Serves SOUTHLAND PAPER MILLS, INC.



- First plant to make commercial newsprint from southern pine
- Most recent kraft mill in America

Pioneering in the making of newsprint from southern pine—and doing an important war job in the production of ammunition board—Southland Paper Mills, Inc., Herty, Texas, like many other progressive, cost-conscious mills, is served by Dorr Equipment.

At the Southland plant, a four-compartment Dorr Combination Green Liquor Clarifier and Dregs Washer receives the raw green liquor from the storage tanks, passes the clarified green liquor, by gravity, through a heater and on to the Dorrco Slaker, which, besides slaking rakes out grit.

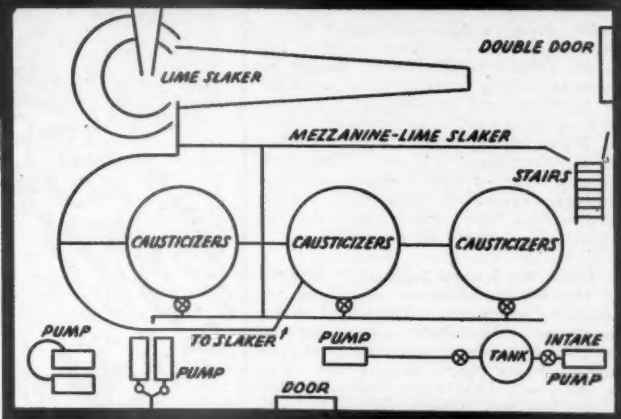
Classified milk of lime is gravity-fed to three Dorr Causticizers, in series, from which the causticized slurry is pumped to a six-compartment Combination Dorr Tray Thickener. White liquor is clarified in the two upper compartments, operating in parallel; mud gets four washes in the four lower compartments, operating in series.



DORR

RESEARCH ENGINEERING EQUIPMENT

ADDRESS ALL INQUIRIES TO OUR NEAREST OFFICE



Caustic House at Southland Paper Mills, Inc.

Efficiency of the Dorr Thickener streamlines mud handling at Southland, and saves money, by eliminating the need for a conventional lime mud filter ahead of the lime burning kiln. Washed mud goes from the bottom compartment of the Dorr Thickener directly to storage tanks, thence to kiln *without filtering*.

Others who are interested in efficient, low-cost causticizing are invited to investigate the equipment that has operated so successfully at Southland. Dorr Engineers—backed by years of experience in the paper pulp field—are ready to consult with you at any time.



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Ickes Grants Pulpwood Areas To Alaska Indians--His Wards

Interior Secretary Harold I. Ickes has recognized Indian claims of possession to 273,000 acres of land in the Tongass National Forest of Alaska. While the grant is only a small portion of the entire area which was claimed by Indians at the instigation of the Department of Interior, it has set a precedent which is expected to encourage further claims and grants.

Although the area granted is not included in the best and most available stands of pulpwood, it is a part of the National Forest. Eventually the Department of Agriculture, through the U. S. Forest Service, contemplated the entire area south and west of Wrangell into five pulp and paper "allotments," each one capable of supporting a mill on a perpetual timber yield basis.

Mr. Ickes' activities in regard to Indian rights have definitely stymied the recent efforts of the Forest Service to lease 14 million cords (7½ billion feet) of hemlock and spruce for a 150-ton mill along the southeast shore of Prince of Wales Island, across Clarendon Strait from Ketchikan. Crown Zellerbach Corp. executives and foresters surveyed the area during the past year, but all negotiations have ceased since the Indian rights became an issue.

Three small areas have been granted to the Indians who are wards of the Interior Department. The island shown southwest of Hydaburg and an area of roughly one-quarter inch diameter (on accompanying map) around that town is one area. Others are slightly smaller—one including Klawok and its vicinity; the other being a narrow strip of shoreline on Kupreanof Island, up and down the coast from Kake.

Saw-timber cutting in Alaska has been particularly active on Dall Island and Long Island, opposite southwestern Prince of Wales Island and off Northwest Prince of Wales.

An effect of the order is to nullify a prerogative of the Department of the Agriculture, by taking parts of the National Forest out of its jurisdiction. No Forest Service official has made any comment, but there is no doubt that developments have made that department very unhappy, blocking its dreams of an Alaska pulp industry.

Secretary Ickes denied the Indians land rights in an area about equal to the grants. He reserved judgment on a large part of the area claimed. Incidentally, Mr. Ickes has always held that his decisions in such cases are final and not subject to review by the court.

The salmon industry of Alaska has been most concerned about these rights. W. C. Arnold, managing director of the Alaska Salmon Industry, Inc., said the grants, while small, will effectively block further development or white population increase on the west coast of Prince of Wales and in Kuiu Straits.



SOUTHEAST ALASKA—Heavy black lines show coastal sections which were claimed by Indians of Hydaburg, Klawok and Kake communities. Accompanying article describes parts granted; also saw and pulpwood area. (See May 1945 and May 1944 Review Numbers of PULP & PAPER INDUSTRY for more details on Alaska pulpwood offers and negotiations).

Construction Proceeding On \$10,000,000 Mexican Mill

Construction is proceeding rapidly on the new \$10,000,000 pulp and newsprint mill being built at Atentique, Mexico, by a group of Mexican capitalists and which will be managed by Arthur Ready, formerly of Rayonier Incorporated.

Mr. Read plans to leave for Mexico about Sept. 1 to be on hand during the final phases of construction. George F. Hardy of New York is consulting engineer for the project.

Changes in Top Executives of Kimberly-Clark Corp.

James C. Kimberly, son of one of company founders, and John S. Sensenbrenner, former vice president in charge of sales, have resigned as directors of Kimberly-Clark Corp.

W. H. Clifford and W. R. Kellett were elected to succeed them. Mr. Clifford was additionally elected vice president to be in charge of finance. Mr. Clifford joined the company in 1920 while Mr. Kellett began in 1917 and was named general superintendent early this year.

In other elections, J. F. Hunt became treasurer, replacing Mr. Clifford, and continuing as secretary and comptroller; while J. Leslie Sensenbrenner was elected as an additional assistant secretary treasurer.

Three new assistant vice presidents are: R. W. Lyons, general manager of the woodlands division; C. F. Jenkins, sales manager, and R. M. Watt, who also is assistant to the president of the Spruce Falls Power & Paper Co., and is being transferred to New York to head the eastern division.

W. M. Wright has been named director of service operations.

TAPPI Makes Plans For N. Y. Meeting

The Fall meeting of TAPPI tentatively scheduled to be held in Buffalo, N. Y., during the week of Sept. 17 was cancelled by the unanimous vote of the association's executive committee at its quarterly meeting in New York. Restrictions on civilian travel made this step necessary. Local sections are urged by President Edwards to take advantage of this opportunity to strengthen their organizations and to conduct programs at their regional meetings that will contribute to the technical advancement.

National committees are requested to proceed with plans for an annual meeting at the Commodore Hotel, New York, during the week of Feb. 24, 1946.

Wollenberg Addresses New Organization

The "Longfibre Kraftsmen" held their fifth dinner meeting at Longview, Wash., recently, and were addressed by H. L. Wollenberg, president of the Longview Fibre Co., San Francisco. Mr. Wollenberg spoke on the history of the company.

Frank Sullivan in East

Frank Sullivan, assistant to the resident manager of the Camas, Wash., mill of Crown Zellerbach Corp., returned on August 1 after an extended trip through the east, including stop-overs in Wisconsin.

Coast TAPPI Plans to Resume Meetings, With 4-10 P. M. Program at Camas on Oct. 2

The Pacific Section of TAPPI, through its executive committee, has gone on record as supporting the resumption of an active program of constructive technical discussions in afternoon-evening meetings.

The coast executive committee met July 26 at the Multnomah Hotel, Portland, Ore., and approved the following tentative schedule of dinner meetings for 1945-1946:

Oct. 2—Camas, Wash. (beginning at 4 p.m. with technical papers).

Dec. 4—Everett, Wash.

Feb. 5—Longview, Wash.

April 2—Bellingham, Wash.

Early June—Joint meeting with Superintendents of the Pacific Coast, is possible.

This is in line with the recommendation of President Edwardes that sections hold their meetings wherever possible. The scope of these meetings would depend upon wartime restrictions in effect at the time, but in any case, they would mark the resumption of dinner meetings in the west after a year's total blackout of all such gatherings.

William R. Barber, member of the national executive committee and director of the Central Technical Dept., Crown Zellerbach Corp., made a report on the national organization and he was elected chairman of a committee to promote the Shibley Award competition on the Pacific Coast. This award is for the



CLIFFORD CRISPIN, new Assistant Canadian Timber Controller, in charge in British Columbia, who is in direct control of export of Canadian pulpwood to western U. S. pulp mills. Only "token" shipments have been made since 1942 to these mills, all on Puget Sound—this year, only 32½ million feet (equal to about 65,000 cords) as compared with a peak of 192,000,000 feet in 1941.

D. D. Rosenberry, who had been Assistant Controller in Vancouver, B. C., is now Timber Controller in Ottawa for all Canada. Mr. Crispin is on loan from Seaboard Lumber Sales, Ltd.

best technical paper presented during a year of meetings by a mill operations employee.

H. W. Bialkowsky, the new Coast chairman and technical director, Everett mill, Pulp Div., Weyerhaeuser Timber Co., presided and **G. H. Gallaway**, the new vice chairman and technical director, Crown Zellerbach Corp., Camas, reported on results of a program questionnaire.

Kennedy Tours Mills

P. J. Kennedy, secretary and sales manager of Pacific Paperboard Co., Longview, Wash., returned July 17 after an extended trip through paperboard mills of the east and middle west.

Mrs. Dempster on Leave

Mrs. John Dempster, secretary to **Erik Ekholm**, general superintendent of the Puget Sound Pulp & Timber Co. is on a one month leave of absence on Vancouver Island, to be with her husband, now returned from a year and a half with the U. S. Army in Europe.

Reynolds Promoted To Coos Bay Technical Director

Promotion of **Clifford G. Reynolds** to technical director for both the Empire, Ore., and Anacortes, Wash., divisions of Coos Bay Pulp Corp., subsidiary of Scott Paper Co., is announced by **C. Wylie Smith**, vice president and manager of the former company.

Nicholas Jappe, graduate of the University of Washington, makes his bow in the industry by taking over Mr. Reynolds' previous duties as chief chemist at Anacortes.

Mr. Reynolds, also a Washington alumnus, will make his home in Empire and spend most of his time there, with occasional trips to Anacortes. He previously was with Rayonier Incorporated and St. Regis Paper Co.

Scott Earnings Augmented By Automatic Machinery

Scott Paper Co., Chester, Pa. announce consolidated net earnings after provision for preferred dividends, for the six months ended June 30, were \$657,544, equivalent to \$.94 per common share on an average of 694,402 common shares. Net earnings were \$645,747 for the corresponding period in 1944.

The company points out that if net earnings of Automatic Paper Machinery Co., Inc., for the portion of 1945 prior to the acquisition of its assets by Scott were added to consolidated net earnings, the total would amount to \$908,948.



HAROLD W. HILLER, who has been appointed Assistant to the Technical Director, Marinette Paper Co., Marinette, Wis. Bleached and unbleached sulphite pulp, facial and toilet tissue and towel are made at Marinette, wholly owned subsidiary of Scott Paper Co. Mr. Hillier has been Chief Chemist at Coos Bay Pulp Corp., Empire, Ore., for the past three years.



LESLIE R. "SPUD" HARTMAN, newly appointed Master Mechanic, Everett, Wash., mill, Pulp Div., Weyerhaeuser Timber Co. Mr. Hartman succeeds **Carl Ries**, who resigned to accept a position as Engineer for Columbia Lumber Co., in Southeastern Alaska. Mr. Hartman was promoted from Shift Superintendent, and previously had been Machine Tender at the Everett mill.

Peroxide Bleaching of Groundwood Highlights Deferiet Program

ON June 15, the St. Regis Paper Co. broke ground for its new \$4,000,000 expansion program at Deferiet, N. Y.—and the Black River Valley, long famous as a pulp and paper country, was again witnessing history being made by St. Regis.

It was back in Jan. 1899, that the Deferiet mill was incorporated, with an original investment of \$2,000,000. Within two years there was not only a modern mill on the banks of the Black River but there was the village of Deferiet to go with it—complete with an inn, schools, a general store, post office, and homes.

The possibilities seen in water power at Deferiet was one of the prime reasons for locating the mill there. The present mill buys its power, but in the original set-up there was a power house with six pairs of 39-inch wheels developing 1800 hp. per wheel under a 48-foot head. A part of the project was a 4400-foot canal and tail-race 1300 feet long. But water power is not the lone advantage offered by the Black River country. There are large supplies of limestone, and under normal conditions the dairy industry offers plenty of casein for coatings. Finally, there are the nearby forests, where spruce is not so plentiful as in the past, but hardwoods are going to take up some slack by finding new use in pulp manufacture.



ROY K. FERGUSON, President, St. Regis Paper Co., whose expansion calls for \$4,000,000 investment at Deferiet, N. Y.

The Personnel

Most of these resources were carefully considered by the founders. The president was then George W. Knowlton, a name still prominently identified with the paper industry in Washington. George C. Sherman was secretary treasurer, and the general manager was David M. Anderson. St. Regis is noted for its employee-management relations, and many a man lived out his active

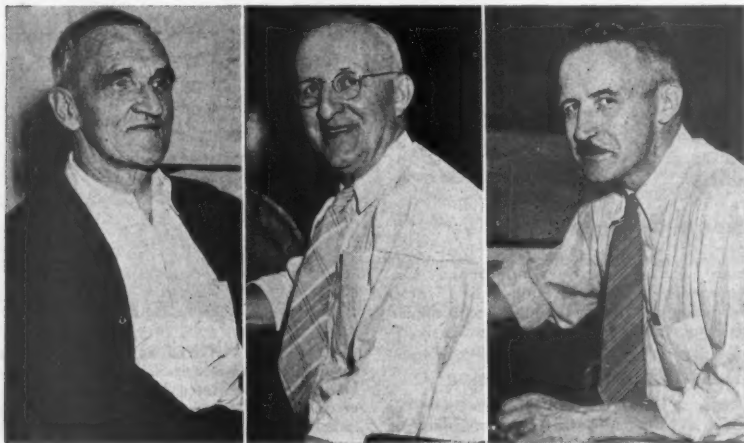
life in the mill. One employee today, William Olmsted, superintendent of the finishing room, was an office employee when the mill was opened 44 years ago. There are many whose employment dates back ten to twenty-five years and more. At peak production, there are 600 employees.

This year R. K. Ferguson, president of St. Regis, appointed Lyman Boeman as over-all superintendent of a group of mills, of which Deferiet is one. C. B. Martin, vice president in charge of operations, makes his headquarters at Deferiet. He came with St. Regis in 1913 from the Agricultural Insurance Co., Watertown.

Edward Marshall, mill manager, came to Deferiet from what was then known as the International Paper Co. mills at Bellows Falls, Vt. P. J. Baron, chief engineer, was a consulting engineer when he joined St. Regis in 1920. Fred C. Goodwill, technical director, has been at Deferiet almost since the year of his graduation from Pratt Institute 17 years ago. The chief chemist is D. C. Mather, now assistant with a wartime staff of five young women.

The excellent St. Regis employee relationships are easily apparent in the village of Deferiet. The settlement is a pleasant, happy one—it's obviously a good place to raise children and obviously a good many are being raised there. It's within easy shopping distance by car or bus to Carthage or Watertown.

Most of the residents can tell you not only the history of the mill itself, but also the town. They know that the village takes its name from Madame de Feriet, mysterious and glamorous, who, according to her own story, was maid of honor to Queen Marie Antoinette. She fled to America to escape the same fate as the queen and chose a hilltop near the mill as a site for a lavish white residence and this was a center of French society which settled for a time in the Black River Valley. The lady had great plans for that part of New York State, but they did not include the manufacture of paper and they did not meet with the success that crowned the efforts of St. Regis. Yet she is still a legend in the town and most of the paper mill folks have seen the oil painting



DEFERIET MILL EXECUTIVES (left to right): **WILLIAM OLMSTED**, Finishing Room Supt. (with mill since 1901); **EDWARD MARSHALL**, Mill Manager, and **FRED C. GOODWILL**, Technical Director.

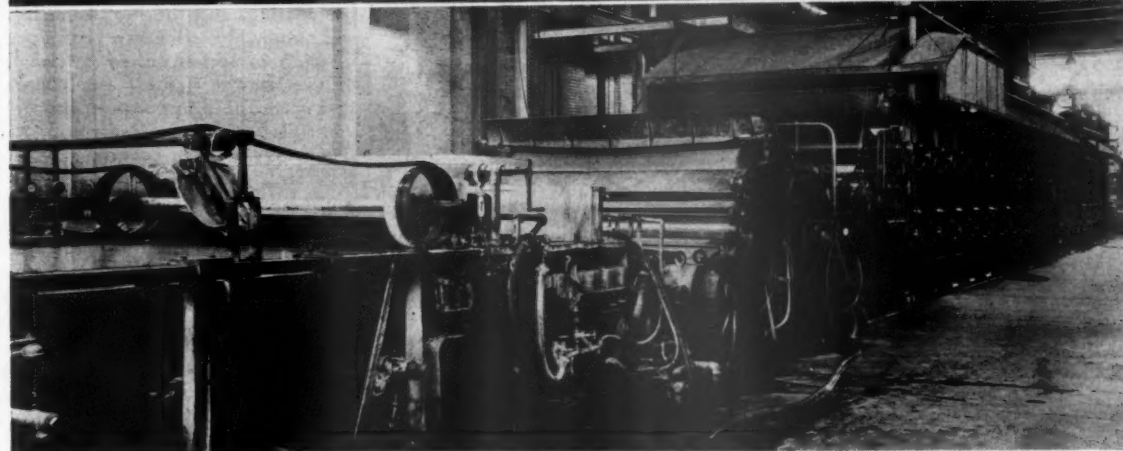
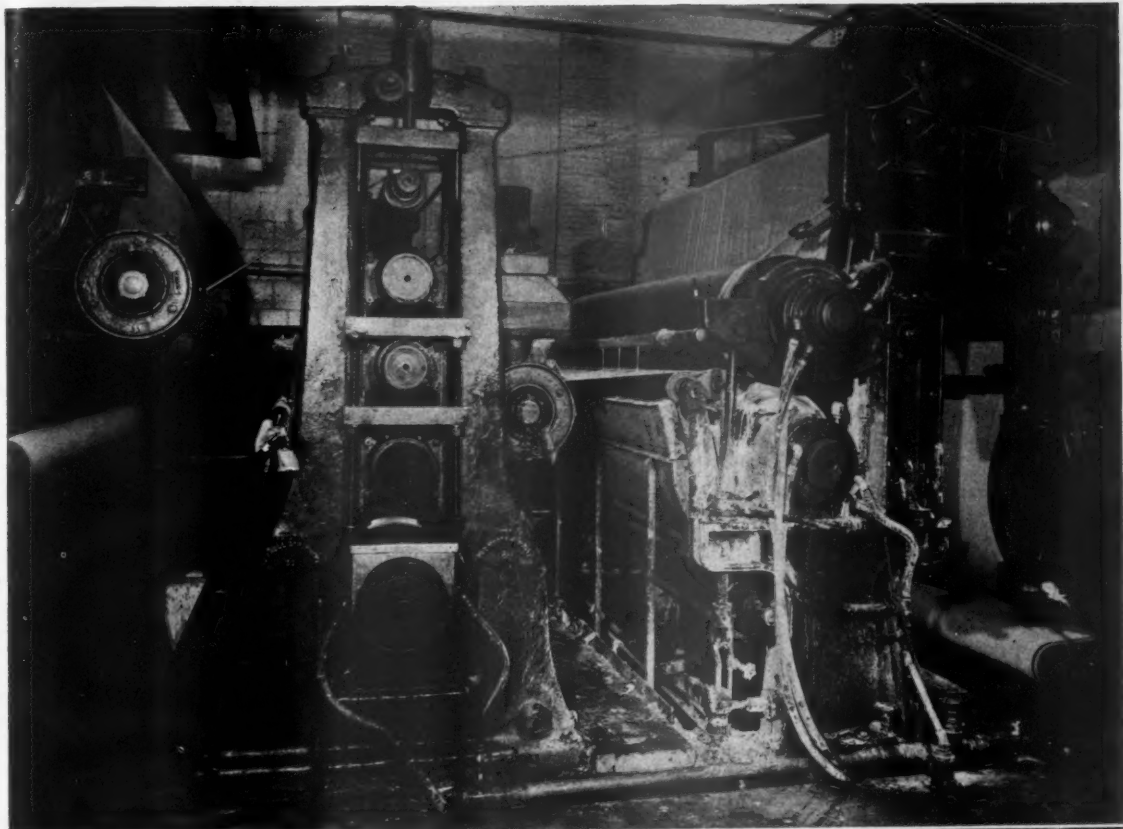
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No. 5 COATING MACHINE (Bagley & Sewall Co.) at the Deferiet, N. Y. Mill of St. Regis Paper Co. Upper view is close-up of coating attachment, engineered, built and installed by Deferiet staff. Coating is done by size press. Explanation of the process and use of rolls in this picture is given in the accompanying article. Below, wet end of machine. No. 4 will also be used for coating.

of her home which hangs in the mayor's house.

Wood Supply

The Deferiet mill draws its pulpwood from three main sources of supply. The stand at Godbout, on the north shore of the St. Lawrence, 30 miles downriver from the McCormick mill at Bae Comeau, grows under conditions which can be said to offer a perpetual supply. Second-

ly, there is the stand owned by the New Hampshire and Vermont Lumber Co., a subsidiary of St. Regis at the headwaters of the Connecticut River. The third source is Noble Borough, operated by the company on ground owned by the Adirondack League Club, on the road between Utica and Speculator. The wood is from 75 to 85 per cent spruce—the remainder largely balsam, with some poplar coming in.

In normal times the mill makes use of hardwoods. Use of hardwoods and poplar will open up a new source of income to local farmers.

Wood is brought to the mill by both truck and rail, and the company operates its own equipment in both. There are three locomotives, and considerable company-owned track in the yard.

In handling pulpwood in four-

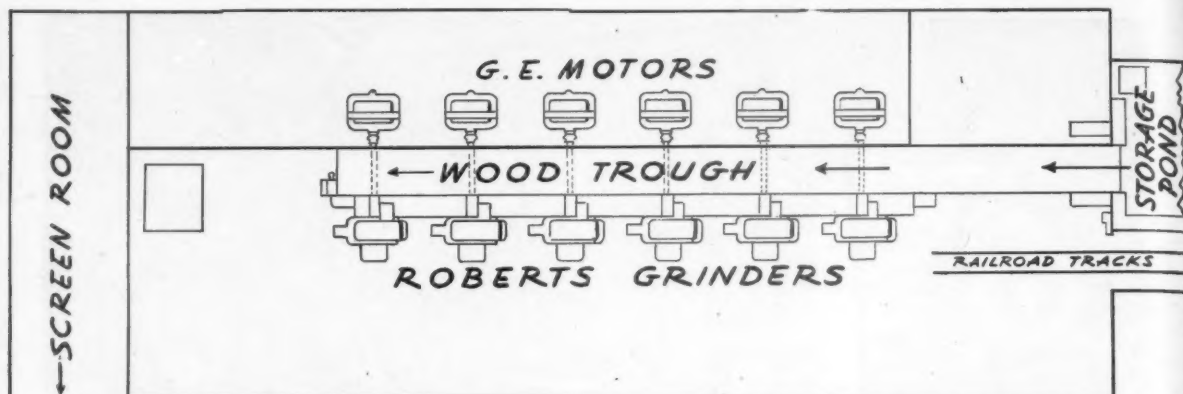


DIAGRAM OF NEW GROUNDWOOD MILL AND ROBERTS GRINDERS SET-UP at Deferiet, N. Y. (St. Regis Paper Co.) is shown across top of these two pages. Flow of wood begins on opposite page and follows arrows.

This part of mill connects with the Sulphite Mill across bridge as shown in Deferiet plan on page 40.

foot lengths the company uses a method not usually encountered. The wood is stacked by cords within a circular steel hoop. This not only makes for orderly stacking, but is of great safety value. In the event of fire, the circular piles can be moved by a crane in order to open them up and extinguish the blaze quickly. After unloading, the steel hoops are re-shaped and go back in the cars to the unloading docks, for use again.

When the representative of PULP & PAPER INDUSTRY was at the mill this summer, shortly after ground was broken on the new project, next year's woodpulp supply, fine-looking material, was already stacking high in the yard. An interesting method of wood handling here is by means of a tractor crane with an orange-peel bucket for transferring wood from pile to conveyors. It is not only labor-saving but makes for easier and safer breakdown of the woodpile.

Deferiet has always been noted for its production of book, magazine, catalogue, directory, tablet, mimeo and message papers, fine groundwood papers in general, and is one of the chief sources of V-mail papers. But with the completion of the new project, Deferiet will become an even greater paper source for eastern publishers. The mill will produce 100 tons of unbleached sulphite per day; 30 to 40 tons of which can be bleached, and its paper production will be 275 tons per day when the improvements are completed. Deferiet's comparable 1945 listed capacities are 60-65 tons of sulphite, and 190 tons of paper. The mill also makes

125 tons of groundwood daily.

Deferiet Improvements

Since 1901 there have been gradual improvements made at Deferiet until today it is a modern sulphite operation, but chief interest in the mill now centers on its coming groundwood bleaching operations, of which more later.

An interesting fact about the equipment at Deferiet is that much of the important units are a product of the Black River Valley, as local as the limestone from which a large part of the original buildings were built, and as native as many of the employees. Cases in point are the Carthage chippers, first of the equipment encountered in the wood operations after the conveyors have brought the pulpwood from the yard. These were designed and built by the Carthage Machinery Co., in nearby Carthage.

The five paper machines already installed in the mill, and the giant 212-inch machine which was purchased from B-F-D Company after the latter's acquisition of the Augsburg mill in Ogdenburg, are all from Bagley and Sewall, the pioneer paper machinery manufacturers in Watertown. Parts of this No. 6 machine are now at the Bagley and Sewall plant for rebuilding and assembly, and other parts are ready for incorporation in the renovated machine. A new building is to be built to house the No. 6 machine whose changes will include rebuilding of the wet end to take a 218-inch wire. The other machines and their wire widths are as follows: No. 1—145 inches; No. 2—126 inches; No. 3—156 inches; No. 4—160 inches; No. 5—121 inches, and

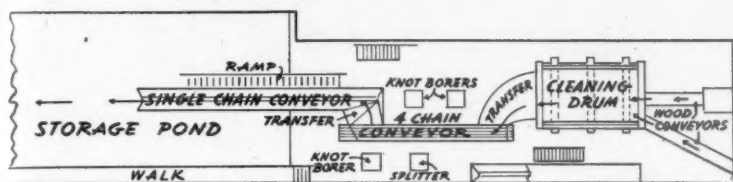
the rebuilt No. 6—218 inches.

Interesting examples of how Deferiet has kept abreast of equipment improvements are the installations of the Sandy Hill drive on the No. 5 Machine. This compact drive has eliminated long belts, put the drive-power on the same floor with the machine, and offered a better range of speeds and considerably more control.

The No. 5 machine is equipped for coating, and the No. 4 machine will soon be likewise equipped. Coating is accomplished by means of the size-press, the paper coming first from the dryer section through a 4-roll breaker stack through the size-press (rubber-covered bottom roll and chrome-plated top roll) where the coating is applied to the wire side by the bottom roll which picks it up from the tub, and to the felt side by a shower pipe, a pool being formed in the nip of the press. The coated web then passes to the final dryer section.

A still further example of Black River Valley equipment were the services from the Stebbins Engineering and Manufacturing Co., whose plant is located only a few miles from the mill on the outskirts of Watertown. Stebbins lined the 8-ton 14x44 digesters, furnished the accumulator linings, the tile tanks and the pit linings. They will build the new bleached tile sulphite storage chest, as well.

In the sulphite mill, still another product of the Black River Valley is in use in the form of the hot-acid system, a development of the Chemipulp Process, Inc. of Watertown. This process, by storing the cooking acid under pressure in a huge sphere or accumulator, makes available hot



HERE IS FIRST PART OF NEW GROUNDWOOD MILL PLAN for Deferiet Division of St. Regis Paper Co. Arrows show flow of wood. Remainder of storage pond and continuation of flow is shown on page 38.

acid for the cooking which saves both steam and time in starting the cook and makes for high and uniform strength acid at all times. The acid itself is prepared by what is known as the milk-of-lime process in a modern plant incorporating the Kimberly system. The building for the acid plant was constructed just previous to the out-break of war as part of the projected expansion and modernization program. Installation of equipment was made and the plant put in operation using substitute materials. It has a capacity suitable to a 125-ton pulp mill and will take care of a fourth digester which is included in the expansion project.

To Bleach Groundwood

The present sulphite bleaching system is a two-stage chlorine-hypochlorite of 35 tons capacity. Unique is the fact that no bleach make-up is used. The pulp is washed in the acid state and lime added to the stock as it comes from the washer and chlorine is added in the bleacher.

The groundwood mill improvements which will start the new groundwood bleach plant will replace the old 6 lines of 24 grinders with six of the Roberts type and at least one of the latter will operate 24 hours daily.

St. Regis gives considerable credit for its new groundwood bleaching program to E. I. du Pont de Nemours & Co., Inc., and particularly to J. S. Reichert, manager of the peroxygen products development in the electrochemicals department, who has made a considerable study of this recent development. Deferiet will use the peroxide process for bleaching its mechanical pulp, in three primary operations:

1. Rapid, thorough mixing of the sodium peroxide bleaching solution with the pulp in controlled proportions;

2. Storage of the peroxide treated

pulp long enough to permit bleaching to go on to completion;

3. Treatment of the peroxide bleached pulp with neutralizing and reducing agent, such as a sulphite cooking acid.

At St. Regis' Deferiet mill the unbleached groundwood from the deckers will be delivered at a constant consistency and at a measured rate into a mixer. There it will be mixed with the peroxide bleach in controlled proportions. The peroxide treated pulp passes through holdings tanks where the bleaching action goes into completion. When the pulp is neutralized and traces of residual peroxide are removed by reducing agents it is ready for delivery to the beater supply chest.

Spruce, balsam and poplar — the woods available to Deferiet — have been proved to react extremely favorably to the process. The bleaching solution is prepared by dissolving sodium silicate and solidum peroxide in water and adding

enough sulphuric acid to adjust the solution to proper alkalinity. Epson salts in minor amounts are mixed with the solution to stabilize the bleaching solution by depressing the effect of copper, manganese and iron, which materials tend to cause rapid decomposition of peroxide solutions.

According to Mr. Reichert, mechanical pulps, with their high bulk, good capacity, good printing properties, low costs, etc., are especially applicable in the production range of papers offered by St. Regis at Deferiet. Improvement in brightness and elimination of yellowing are the outstanding results of the bleach treatment. The papers are much finer in texture than book grades made with unbleached groundwood.

Routing of Materials

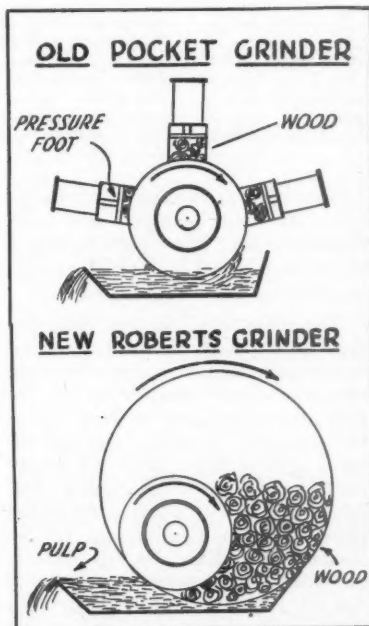
The conveyor system makes possible the transfer of peeled wood either from piles or directly from box cars or trucks to the wood room. The rough wood is conveyed from one of two soaking ponds to two 8 by 16-foot barking drums in tandem.

Wood intended for the groundwood mill is separated from that for sulphite, either just before it enters the wood room or after being barked. A separate conveyor takes it to a circular saw where it is cut into two-foot lengths. It is then carried by conveyor across a small valley to the storage pond outside the groundwood mill. From the pond it is routed through a washing drum to the interior pond. The wood is cleaned with DeZurik knot-borers, and racked in quarter-cord racks for wheeling to the grinders.

The grinders are equipped with Foxboro constant temperature control.

The stock from the grinders travels through the bull screen, pumped up to two rotary knotters, and from there goes by gravity through the rotary fine screens. The knotters and fine screens were made by Impco. Rejects of the fine screens run over Sandy Hill flat screens, accepted stock mixing with that from the rotaries, while the tailings are put through a six-roll Haug refiner and returned to the system for re-screening. Screened stock runs over the riffles to remove any sand present, then through transite piping across the canal to decker room in the paper mill where it is thickened and pumped to the storage tanks.

Wood for the sulphite mill is cleaned in the wood room by De-



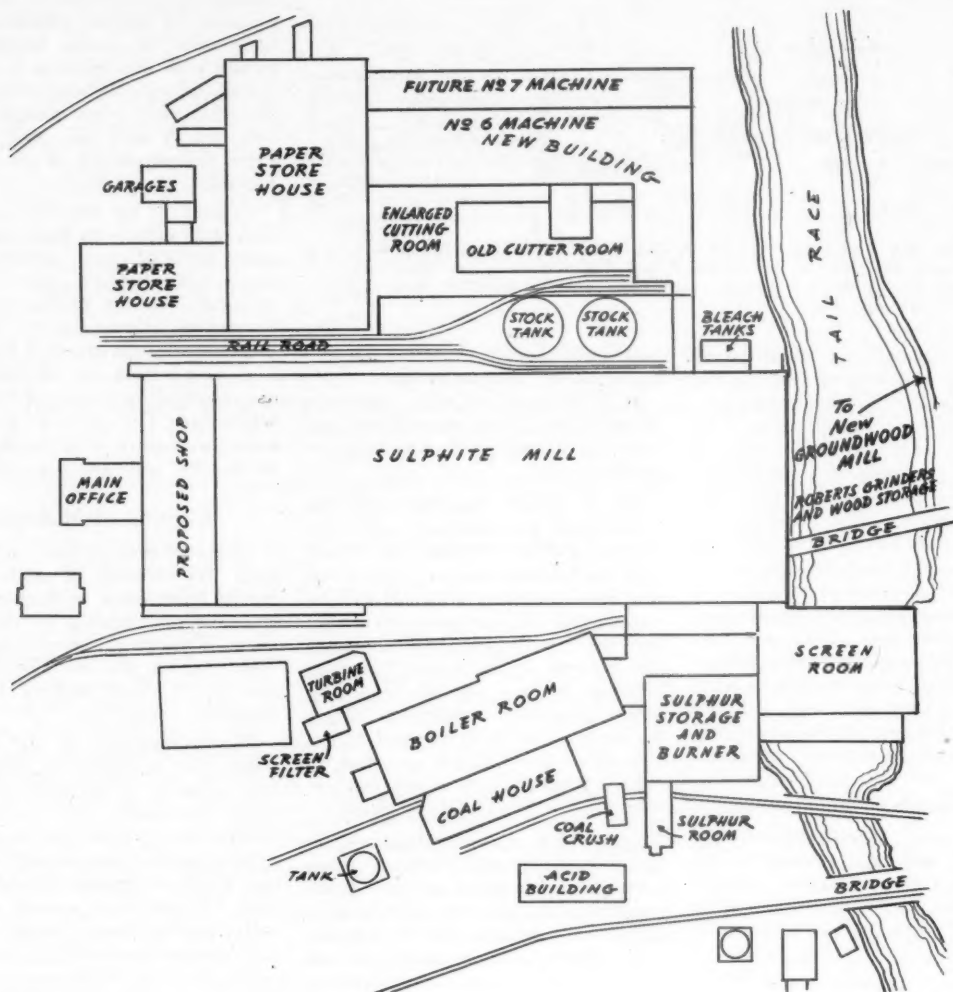


DIAGRAM INDICATING EXPANSION at Deferiet, N. Y., Mill of St. Regis Paper Co. New building for the No. 6 machine acquired from B-F-D Co., Ogdensburg, N. Y., and for a future No. 7 machine is indicated in upper part of drawing. Immediately below is shown newly enlarged cutter room. Increase in size of turbine room, near center, is about double. Also similarly

enlarged is boiler room.

At right of mill race will be new extended groundwood mill in which Roberts grinders will be installed and this is shown in another drawing with this article.

The bridge at right is part of existing structure and connects groundwood mill with sulphite mill. Many of original buildings are constructed partly of native limestone.

Zurik knot-borers and wood-peckers, chipped in Carthage 10-blade chippers, then screened and conveyed on a long belt-conveyor and bucket elevators to the chip bin above the digesters. Control instruments in the digester room are Taylor.

Gulf sulphur is unloaded from freight cars into storage bins, shoveled into melting tanks and pumped in molten state to the sulphur burner equipped with automatic draft-control, which is in turn tied in with a Leeds and Northrup "Micromax" SO_2 recorder. The gas goes through cooling towers and is pumped through milk-of-lime slurry contained in the 30-foot absorbing

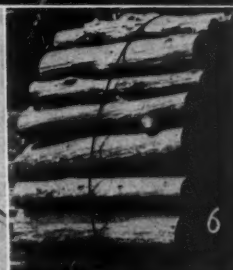
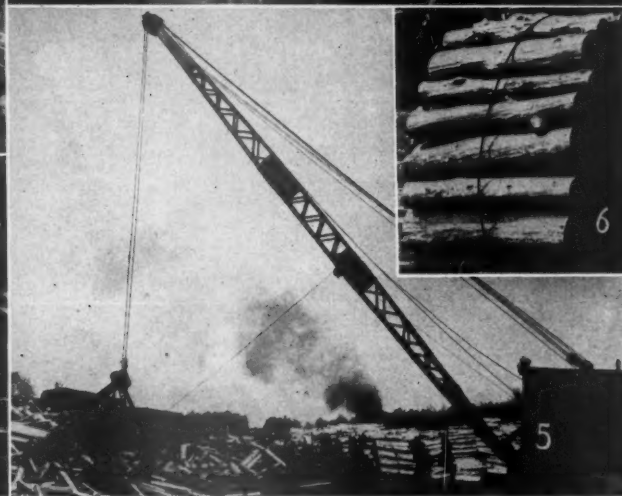
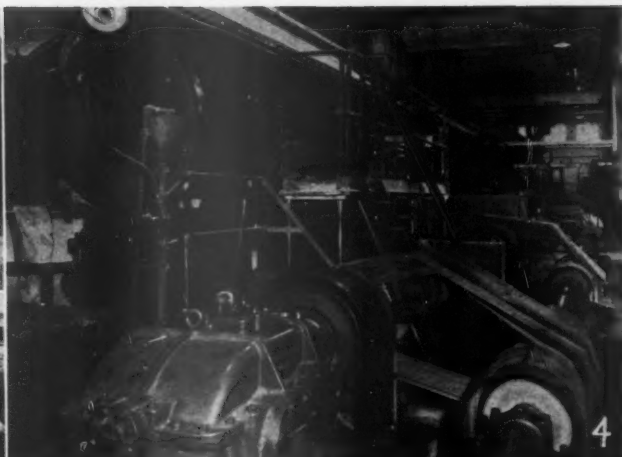
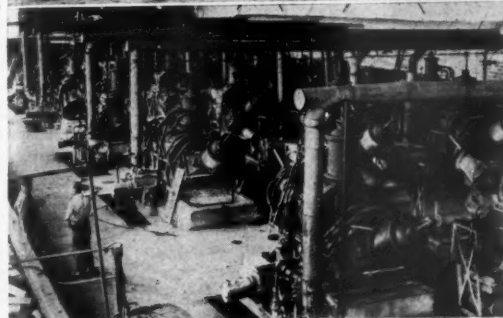
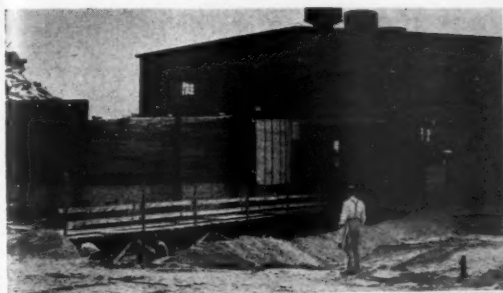
towers, then to storage — to the accumulator for reinforcement with digester relief. The Kimberly acid plant and the Chemipulp process have already been discussed.

The lime used is the dolomite type. It is slaked, diluted to requirements and pumped to the absorbing towers. At the completion of the cook, the pulp is blown from digesters into the blowpits, washed, diluted and screened over 14 Sandy Hill flat screens, thickened and stored for use as slush pulp in the paper mill, or pumped up to the bleach plant. The clay for filler is unloaded from hopper cars to storage by bucket elevator, made into slurry and taken by gravity to the

beater room. Rosin-size is received in concentrated form (70%) emulsified, and reaches the beater room by gravity. Alum is dissolved and pumped to the beater measuring tanks.

The paper machines are equipped with Sven-Pederson save-alls and Sven glue solution is used on the machines as a filler retention aid. Moisture in the paper from the machines is controlled by Foxboro "Verigraph."

The program begun by St. Regis at Deferiet is a step in its previously announced postwar program which put modernization as Number One on a four-point program. The \$4,000,000 will be expended



AT DEFERIET, N. Y., Mill, St. Regis Paper Co.:

1. Starting excavation for addition to groundwood mill; wood conveyor at upper left.
2. Grinder room, where new Roberts grinders will be installed.
3. Six of 7 General Electric 2,000 HP motors which will power Roberts Grinders. This is opposite side of wall shown in Photo 2.

4. Line of Sandy Hill Iron & Brass Works drives for No. 5 paper machine. Keeping drives on same floor with machines eliminates long belts, basement problems and offers better control.
5. Tractor crane with orange peel bucket—one of wood handling methods used at Deferiet.
6. Closeup of pulpwood cord encircled with steel hoop for safety and ease of handling.

about equally among the rebuilding and purchase of the 218-inch machine, and its new building; the power plant; and the improvements to the pulp mills and installation of the peroxide bleaching. St. Regis' research has revealed that wider uses are in store for the papers made at Deferiet, and with its production now moving steadily in high gear, the company is going to be set for peacetime operations when the gong is rung on Japan.

Leaton Irwin Dies

The sudden death from a heart attack of Leaton Irwin, founder and chairman of the board of Irwin Paper Co., Quincy, Ill., is disclosed in a letter from E. A. Damhorst of that company. Mr. Irwin also was chairman of the associated Decatur Paper House and Peoria Paper House in those Illinois cities and of Quincy Compressor Co., in Quincy.

**Hugh Strange Dies
In Neenah, Wis.**

Hugh McGregor Strange, 59, president of the John Strange Paper Co. and Wisconsin Container Corp., both of Menasha, Wis., and of the Stevens Point Pulp & Paper Co., Stevens Point, Wis., died July 17 at Neenah, Wis.

Mr. Strange was a past president of the National Paperboard Assn., a member of the WPB Paper Industry Advisory Committee and member of a family prominent in the industry in Wisconsin. He is survived by his widow and two sons.

**G. W. Sisson Reappointed
To N. Y. Forestry Board**

George W. Sisson, Jr., head of the Racquette River Paper Co., Potsdam, N. Y., and former president of the American Paper and Pulp Association, has been reappointed a member of the board of trustees of the New York State College for Forestry by Governor Thomas E. Dewey.

**Leslie L. Larson Joins
Detroit Sulphite P. & P. Co.**

Detroit Sulphite Pulp & Paper Co., Detroit, Mich., announces appointment of Dr. Leslie L. Larson, formerly of Kimberly-Clark Corp., to the position of technical director. Dr. Larson was a 1934 graduate of the University of Idaho and received his Ph.D. in 1940 at the Institute of Paper Chemistry.

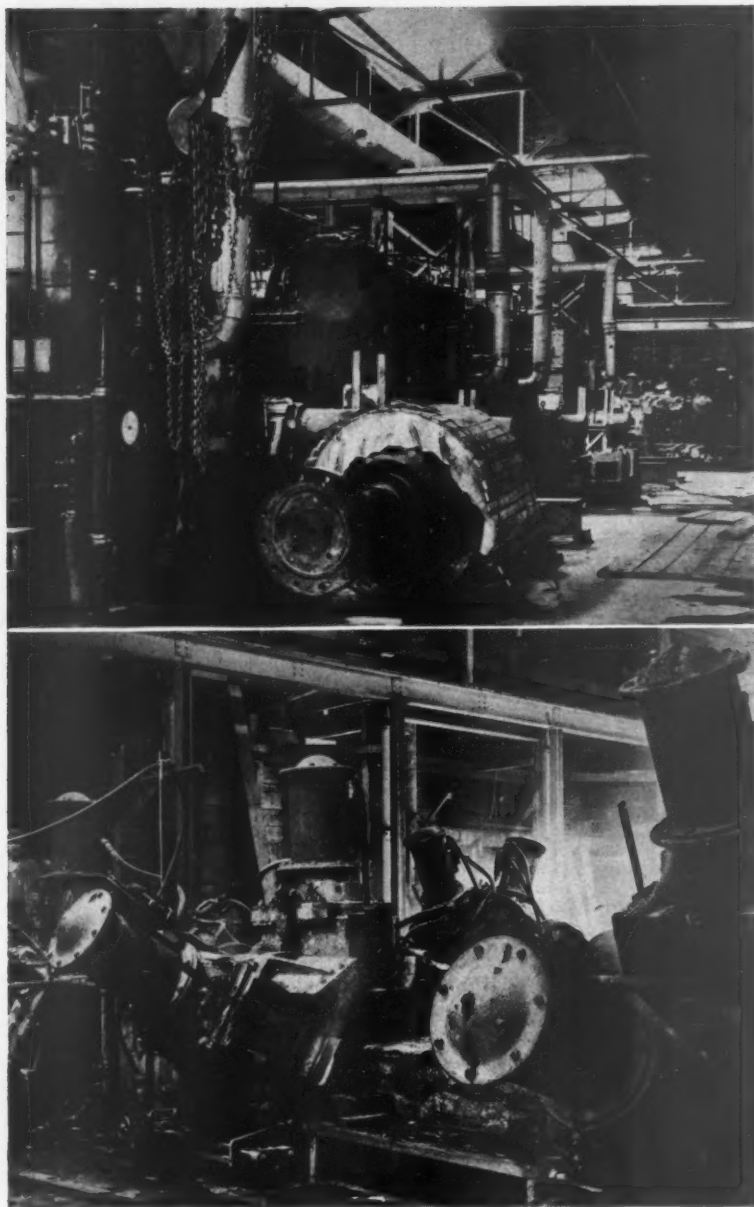
He was formerly employed by Kimberly-Clark Corporation as research chemist and later was with the Edgewood Arsenal in the same capacity.

Henry Vranian on the Job

Who does the work at these summertime mill outings? The mill's newspaper at Chesapeake Corp. of Virginia, West Point, Va., carried this line:

"Henry Vranian (chief chemist), with a worried look on his face, dashing around doing those last minute chores that happen to the best planned picnics."

Development of Electric Power Use In Modern Ontario Groundwood Mill



The Grinder Room (above) at Ontario Paper Co., Thorold, Ont., and below, a line of Roberts Grinders.

Operating a battery of eleven Dominion Wheel and Foundries, Ltd., with load control governors made by Waterous, Ltd., the Thorold unit of Ontario Paper Co. has probably the most modern groundwood mill in eastern Canada—and it is really producing results.

The Roberts grinder consists of a large steel ring traveling very slowly—about one revolution to the

hour. Inside the ring are teeth which catch the wood and push it against a stone revolving in the same direction inside the ring. The result is that a large area of the wood is in constant contact with the stone.

The grinders are only one of several features that make the Thorold operation of Ontario Paper Co. of special interest to pulp and paper men. Another is the company's

large-scale production of industrial alcohol. However, in this description we are chiefly concerned with the groundwood mill, and the story goes back a good many years.

In the earliest days of the industry in eastern Canada a system of revolving screws was used to press the wood against the stone and the stone was turned by water wheel. In about 1880, Warren Curtis invented a system of hydraulic cylinders and applied pressure to shove the wood against the revolving stone. This was the first great advance in the groundwood industry.

Mr. Curtis' son, Warren Curtis, Jr., started work in 1894 at the Hudson River Paper Co. plant run by his father at Saratoga Springs, N. Y., which is in operation today as a unit of International Paper Co. About the same time another man started working there—a man who was to become Mr. Curtis, Jr.'s, lifelong friend—J. T. Jaeger, who is now chief engineer at Thorold.

Both Mr. Jaeger and Mr. Curtis, Jr., went to International Falls, Minn., to build a new mill. In 1911 they parted temporarily, Mr. Curtis returning to New York and developing a new water power grinder room at Corinth while Mr. Jaeger went to the Canadian side to build a new mill at Fort Frances, Ont.

The following year Col. Robert R. McCormick of the Chicago Tribune and Mr. Curtis went to Canada to look for a site of a new mill. They considered Iroquois Falls as a possibility but rejected it; Abitibi subsequently undertook development there.

At this time Mr. Curtis had a new and rather revolutionary idea: Why not use electrical power to turn the grinding wheels instead of water power? The suggestion was regarded skeptically by others in the industry and when Mr. Curtis actually proceeded to make the installation the whole project was popularly known as "Curtis' Folly." Never before had electrical energy been used on this continent at such high voltages. Transformers usually brought it down to not more than 550 volts, but Mr. Curtis was determined to use it at a full 11,000 volts.

Giant Motors Required

Giant electric motors of this voltage were required in order that the power might be used without transformers. Electrical equipment manu-

facturers tried to discourage him, so Mr. Curtis finally went to Sweden for his motors—2,800 h.p.

A representative of PULP & PAPER INDUSTRY recently saw these big motors still in service and P. R. Sandwell, development engineer of Ontario Paper Co., who was previously resident of the new Australian newsprint enterprise in the Derwent Valley, Tasmania, says that some of the motors have never required repairs. The idea of using high voltage was soon followed by other companies.

When the Thorold mill began to operate there were six lines of grinders, each line powered by a big motor. There were four grinders of the hydraulic cylinder type first invented by Warren Curtis, Sr., in each line. One man could look after two grinders.

In those days the mill employed not more than 300 men and the output was 150 to 200 tons a day. Today the mill employs 650 men and the potential capacity is 500 tons.

In 1915 Mr. Jaeger, having finished his job at Fort Frances, yielded to Mr. Curtis' plea and joined him at Thorold, where many improvements were planned and carried out. The plant had started with two paper machines. Two more were added, then a fifth. When Mr. Curtis died, Arthur Schmon came in from the company's timber operations to take charge at the mill as president and general manager, a dual position which he still holds.

One of Mr. Schmon's first acts was to establish a control department to make chemical and engineering studies and see that all departments were properly co-ordinated. The first chief of this department



Another view of Grinder Room at Ontario Paper Co.

ment was Lorne C. Anderson, later appointed divisional manager.

When it became obvious that the mill would have to be given additional grinding equipment some of the Thorold officials heard of a new experimental grinder being operated by a man named Roberts. Lorne Anderson and J. B. Jones, sulphite mill control engineer, went to see it in operation. The groundwood control engineer at that time was Walter Holland, now groundwood superintendent at Ontario Paper Co.'s big new mill at Baie Comeau, Que.

In 1938 one unit of the Roberts grinder manufactured by Hydraulic Machinery Co., Ltd. of Montreal, was purchased—the first commercial model ever made. Its operation was so impressive that the mill was converted in the time which

followed until, by 1942, it was entirely equipped with Roberts grinders—one big grinder to each motor against the four grinders to each motor back in 1913.

Dominion Wheel & Foundries Ltd. and Waterous, Ltd., are both licensed to manufacture Roberts grinders in Canada and for export to some foreign countries.

In the United States, the Appleton Machine Co., of Appleton, Wis. (H. P. Madsen, pres.) possesses the exclusive manufacturing rights, and at present is producing six of the Roberts machines for St. Regis Paper Co.'s new development at Deerfield, N. Y.

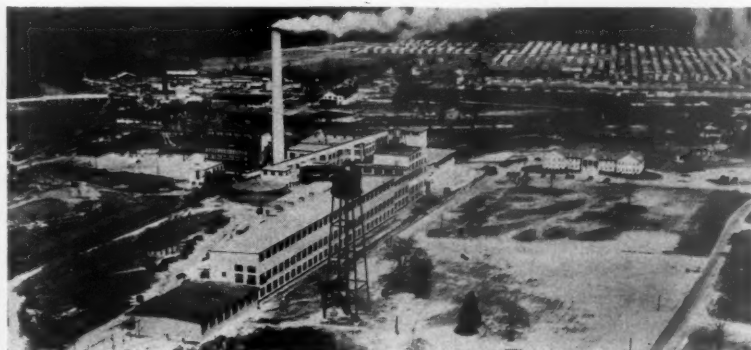
Dr. Carl B. Thorne Dies At Hawkesbury

Dr. Carl B. Thorne, vice president of Canadian International Paper Co., and for many years widely known for his technical attainments in the industry, died recently in Hawkesbury, Ont., his home for several years.

Last December, on his retirement as technical director of Canadian International after 41 years with the company and its predecessors, Dr. Thorne was tendered a complimentary dinner in Montreal, when he was presented with a silver rose bowl.

Dr. Thorne was born in Norway in 1876 and practiced as a cellulose engineer in Norway, Germany, Canada and the U. S. He came to this continent in 1902 and joined Riordan Paper Co. as engineer and sulphite pulp expert. He became manager in 1905. This was the beginning of a long association with the industry in an executive capacity.

Several important units in modern mills were originated and developed by him, such as the Thorne tower and the Thorne barker.



CHESAPEAKE-CAMP CORP., operating this 200-ton sulphate pulp mill and kraft paper plant in Franklin, Va., will hereafter be known under name of parent company, CAMP MANUFACTURING CO., INC. Extensive timber lands have been acquired by the latter firm during 58 years and also will serve lumber, turpentine and tall oil plants. For years, it has operated on second growth and—in some cases—on third growth timber. Second generation members of the founding Camp family continue as top officers.

MARATHON BUILDING A MODERN TOWN

Machinery Will Be Installed This Winter



These three officers of Marathon Paper Mills of Canada, Ltd., envisioned and are building the new Marathon pulp mill: (Left to right): D. CLARK EVEREST, President; JOHN STEVENS, JR., Executive Vice President; and NILES M. ANDERSON, Vice President and General Manager. Mr. Everest and Mr. Stevens hold similar positions in the parent company, Marathon Corp., Rothschild, Wis., operator of mills in Rothschild, Menasha and Ashland, Wis., and Menominee, Mich.

A NEW pulp mill thoroughly modern in every detail, embracing several revolutionary features and designed to be one of the lowest-cost producers on the continent is now being rushed to completion at Marathon, on the north shore of Lake Superior in Ontario, by Marathon Paper Mills of Canada, Ltd.

Unprecedented for an operation of this size and type is the concentration of practically all production facilities under one roof, which will also cover power-house and offices. Compactness resulting from this arrangement will tend towards greater all-around efficiency. Employees will save time in moving from one department to another; pipelines and power lines will be shortened, the whole operation streamlined.

Marathon has already become a busy industrial community and its ideal setting, combined with the progressive policy of the organization that is behind its development, gives assurance of its bright future.

Construction has been racing ahead ever since the program was launched in the summer of 1944, and the mill is expected by Vice

President Niles M. Anderson to be ready for operation by June, 1946. Production of 300 tons of bleached sulphate pulp daily will be the objective.

When a representative of PULP & PAPER INDUSTRY visited Marathon this summer, a large section of the picturesque townsite had been laid out and houses erected. The big pulp storage building, 650'x136', with concrete substructure and corrugated roof, was nearly completed. Dredging and pile driving were being pushed ahead for the mill building site, which will be located further to the south than was originally intended. Erection of the structural steel for the mill building was to begin in August. The 1500-foot wharf will be ready for use by mid-October. Excavation for the wood room, chip storage and other units was well under way at the time of the visit.

Marathon is located at the easterly end of wide-sweeping Peninsula harbor, served by the Canadian Pacific Railway main line. The Marathon station is at present about a mile from the mill, but it is being moved east so as to be in closer prox-

imity to the townsite.

When construction of the mill and auxiliary units has been completed, the sequence along the shore from west to east will be as follows: Jackladder and four block piles in a row; pulp storage building; wood room and chip storage building, the mill, coal storage and wharves.

The mill building, which will be 660' x 188', will house office, laboratory, maintenance shop, turbine room, evaporator, causticizing facilities, steam plant and recovery boilers as well as the machines located in a room running the entire length of the building.

General contract for construction is being carried out by Foundation Co., represented by Frank Mullins, superintendent, and Harry Serson, engineer, with their own staff and crews. Consulting engineers are Stone & Webster, Inc., represented at Marathon by R. A. McGrew and T. T. Jones.

Among the more important subcontractors are: Brown & McLean, building the wharf; Angus & Taylor, excavation; Western Foundation Co., pile-driving; Raymond Con-

OWN AND PULP PLANT ON LAKE SUPERIOR

Operations Will Begin During June 1946

crete Pile Co., soil testing; Smith & Travers, diamond drilling; Dean & Chandler, roofing.

Personnel

Marathon Paper Mills is represented by W. B. Crombie, engineer, and S. M. Hodder, townsite architect.

The whole enterprise is under the

direction of Niles M. Anderson, vice president and general manager, whose head office is at 320 Bay Street, Toronto, where he is assisted by Neville Beaton. Grant Ross is also located there as chief engineer, assisted by Roy Emery. Charles M. Barr of the firm of Marshall & Barr (Lloyd Bldg., Seattle) was

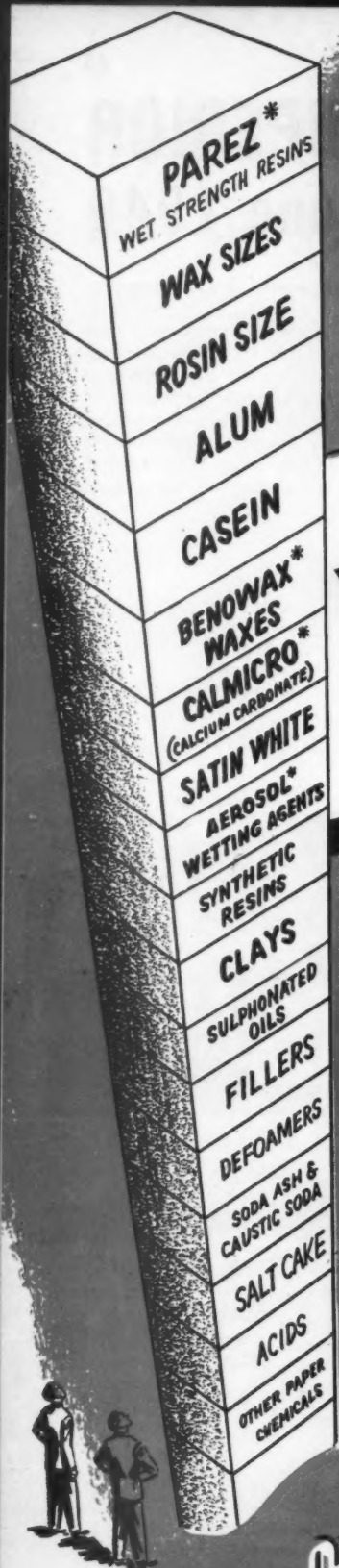
recently appointed special consultant.

Einar Walloe, formerly pulp mill superintendent at Pacific Mills, Ltd., Ocean Falls, B. C., has been appointed general superintendent. A native of Oslo, Norway, he graduated from the University of Oslo in chemical engineering. He worked for a few years with the Barregaard

MOST RECENT PICTURES at Marathon, Ont., where new sulphate pulp mill is being built.

- 1—Marathon's attractive townsite, looking toward Lake Superior.
- 2—Townsite, from the hotel, showing modern construction and individual styling.
- 3—Some of camp buildings, with log booms on lake in background.
- 4—Marathon's modern new hotel.
- 5—Marathon under snow conditions — an earlier picture this year, showing camp buildings. Pulp shed in background. Lake to the right.
- 6—View of camp buildings early this spring.





BIG in size

BROAD in service

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Important, too, is the progress that has been made and accelerated in Cyanamid product developments and service through wartime years, despite necessary shortages and restrictions.

Where the paper industry stands today and where it is headed tomorrow will continue to be a matter of both pioneering new developments to broaden the usefulness of paper, and improve the efficiency of standard items.

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Paper Co. mills in Norway before going to the United States. He was with Howard Smith Paper Mills at Cornwall, Ont., until 1930 when he went to that company's subsidiary, Canada Paper Co., Windsor Mills, in Quebec, mainly to assist in the starting up of the first Tomlison recovery furnace.

Mr. Walloe remained with Canada Paper Co. as assistant kraft mill superintendent and assisted in starting up the bleach plant there, leaving

in 1936 to join Pacific Mills.

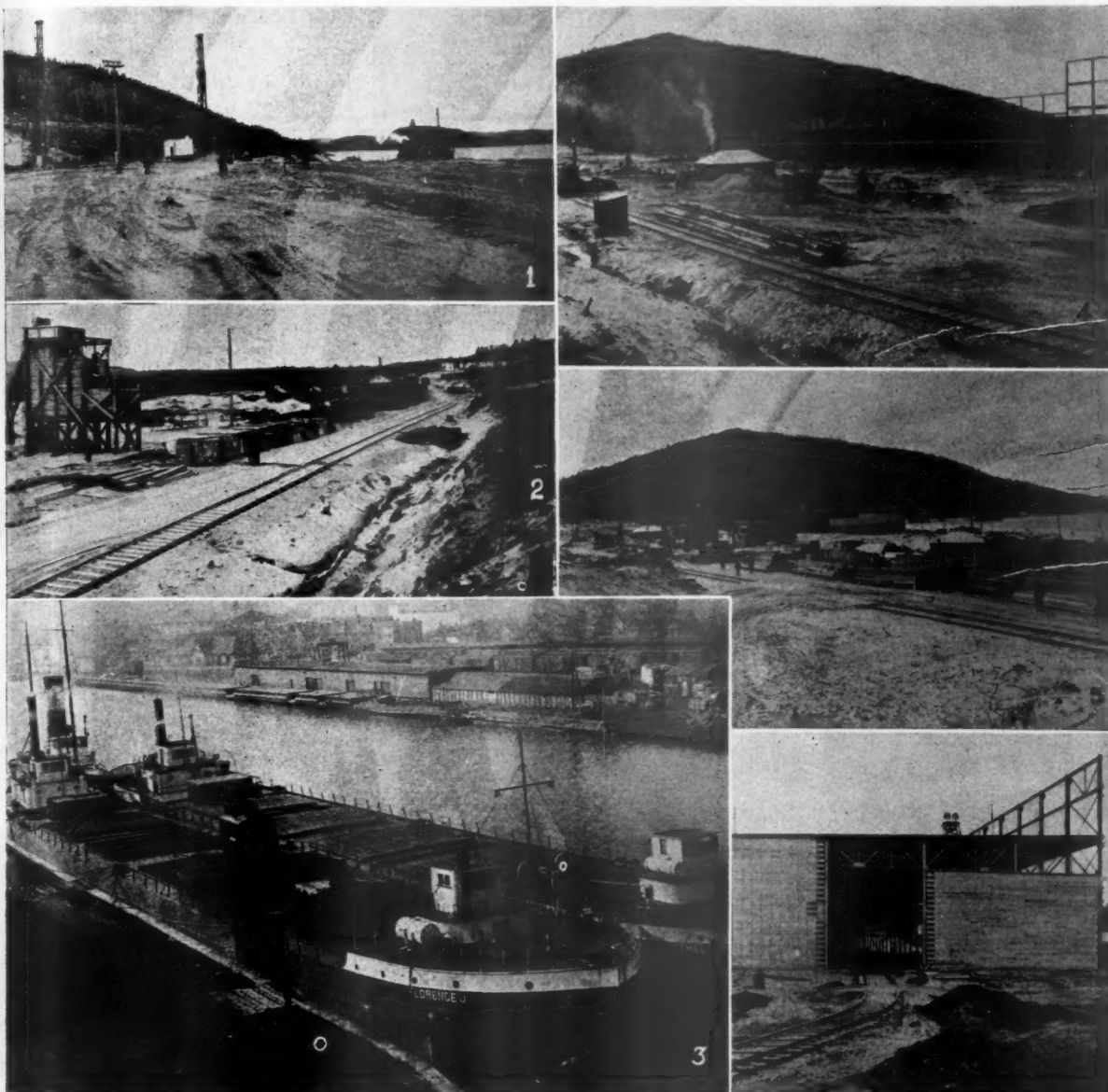
Vice President Anderson and Chief Engineer Ross also have had extensive experience on the West Coast, the former with Pacific Mills and St. Regis Paper Co. Mr. Ross was also with St. Regis before going east.

Head office of Marathon Corporation, parent company of Marathon Paper Mills of Canada is at Rothschild, Wis., and officers include D. C. Everest, president, and John

MADISON SUB-BRANCH
U. S. DEPT. OF AGRICULTURE LIBRARY
FOREST PRODUCTS LABORATORY
Stevens, Madison, Wisconsin, both of whom occupy the similar official positions in Marathon of Canada.

Wood Supply

Most of Marathon's wood supply is from the Pic river which flows into Lake Superior about ten miles east of the mill. The pulpwood is harvested in the conventional eastern Canadian manner. Vice president in charge of the woods depart-



MORE SCENES AT MARATHON, Ont., and on Lake Superior:

- 1—Clearing and excavating site for the Marathon pulp mill.
- 2—Site being prepared for wood-handling equipment at Marathon.
- 3—A typical scene on Northern shore of Lake Superior (no connection with the Marathon operation). Pulpwood barges, such as these of Gt. Lakes Lumber & Shipping Co., carry wood to Wisconsin mills. They also carry ore and grain.
- 4-5-6—These show the Pulp Shed at Marathon under construction. The mill site is along the Lake front back of the shed, as it appears in the top view. Photo 6 is the east end of the shed, showing rail spur.



ON THE JOB AT MARATHON, ONT.:

1—W. B. CROMBIE (left), Resident Engineer for Marathon, and R. A. McGRAW, of Stone & Webster, Inc.

2—Foundation Co. officials: HARRY SERSENS (left), Engineer, and FRANK MULLINS, Superintendent.

3—T. T. JONES (left), Foundation Co., and S. M. HODDER, Marathon's Townsite Architect.

ment is H. P. Klinefister, who makes his headquarters at Port Arthur. General superintendent is Ernest Reeves and camp superintendent is W. Carlson.

The wood is floated down the river and towed in bag booms by a large tug to the booming grounds

in Peninsula harbor close to the mill. Most of the wood is spruce, with some poplar and jackpine in the Marathon timber holdings, which stretch north as far as the Canadian National Railway, where a camp is maintained at Stevens, near the Pic's headwaters.

Marathon's haul-up and wood-handling facilities, designed by John Stadler, Montreal consulting engineer, provide for the handling of 90 cords of wood per hour. The jackladder accommodates wood in four, eight and sixteen-foot lengths. The jackladder has an eight-chain haul, the 16-foot logs riding the whole way to the three-saw slasher, driven by 30 h.p. motor per saw and equipped with 60-inch circular saw. The four-foot lengths, on the other hand, fall on the block conveyor and are transported immediately to the barking drums, while the 8-foot lengths are carried on the two outside chains to the slasher saws.

Several types of conveyor are used in the wood-handling setup. A Link-Belt chain conveyor operates from the slasher to the cross conveyor feeding the drums, which is of the belt type. The discharge conveyor from the drums to the block-piles or mill is also a belt, all the wood conveyors being equipped with Peacock worm speed reducers. The original idea was to have the barked wood carried from mill or blockpile by flume, but it is probable that cable or belt will now be used.

There are to be four block piles, each with a capacity of about 40,000 cords. Although the mill will not be in production for several months, booms have been moving steadily and by the time the machines are ready there will be an adequate supply of wood.

Mill Equipment

There will be four American barking drums altogether, all manufactured by Horton Steel Works, 12 by 45 testrope drive. Three will be dry barkers, and one wet barker will be operated in the wood room.

A Carthage chipper, manufactured under Canadian patent by Waterous, Ltd. — a high-speed 10-knife unit, will chip the wood as it moves from the barking drums or block pile. The chip screens will be of the vibrating type.

The company's chip storage will be of the modern saw-tooth design, operated by five conveyors with controlled feed. The conveyors will operate at an incline from the chip storage to seven digesters, instead of the conventional setup involving the use of an elevator with the storage over the digesters. The adopted procedure is designed to provide faster charge to the digesters. The concrete storage bins are of the Brinkley type.

From the digesters the stock is

blown to the blow tank and all brown stock is pumped to the wash-room, then to a battery of Smythe screens.

After passing through new type Kamy machines and Flakt dryers, being supplied by Paper Machinery Ltd. (921 Sun Life Bldg.) Montreal, bleached sulphate pulp will be shipped in bales. Most of it will go by steamship across the lake—to Menominee, Mich., the former Hoskin mill which Marathon Corp. acquired recently, and also to Ashland, Wis. Vessels carrying pulp from Marathon will be able to carry coal as return cargo, for the company will operate its own power plant, with powdered coal as fuel. A 10,000 kilowatt Westinghouse turbine generator will produce an initial pressure of 500 pounds, and 125 pounds pressure will be available for cooking processes and 30 pounds for the dryer.

Steam from the mill will heat the company's hotel, store, hospital and some other townsite buildings, including bank, but most of the individual houses will have their own furnaces.

Processed water for the use of the mill will be pumped from the lake through a 48-inch pipe extending 3,000 feet from shore.

More than 100 townsite buildings have so far been built under the direction of Townsite Architect S. M. Hodder, and these include a wide range of structures from the



EINAR WALLOE, General Superintendent, Marathon Paper Mills of Canada.

excellently equipped hotel, bunk-houses to accommodate 50 men and office buildings to single-family dwellings. All of modern construction, with the best of fixtures and facilities, the houses are exceptionally attractive in appearance and laid out in such a way as to present a panorama more in keeping with that of an exclusive residential district in a progressive, new city rather than of a mill town many miles from a city.

The old-style layout of row upon row of identical cottages has been totally discarded at Marathon, where almost every home has distinctive individuality, in accordance with Mr. Anderson's idea of what a modern pulp-making townsite should be. When the whole plan is fully carried out, provision has been made for picturesque, curved streets and extensive landscaping. Marathon is going to be a model pulp town; make no mistake about that. That was the original intention of President Everest, and the idea becomes closer to fulfillment every day.

Increased Dyestuffs Deliveries Now Authorized

The War Production Board has approved increased deliveries of dyestuffs to paper mills, as well as the textile industry, under an amendment to Conservation order M-103.

The value of Class D dyestuffs, which are chiefly used in the paper industry, which may be delivered in any given quarter may now be increased by 20%. It is understood that this brings amounts available to about 80% of the dollar value of deliveries in 1941.

The value of Class C dyestuffs, used in considerable amounts in papermaking, which may be delivered in any quarter has been increased 17½%. This brings Class C deliveries to about 70% of 1941 figures.

The textile industry benefited from the biggest boost — a 25% increase for Class A and B dyestuffs.

Mill Cost Accounting Will Be Discussed

At least one meeting in the 1945-46 program of Portland, Ore., Chapter, National Association of Cost Accountants, will be devoted to pulp and paper mill accounting.

Included in the membership are representatives of all the pulp and paper manufacturers in the Columbia Basin area.

Meetings are held once each month, at which time talks by qualified speakers are given on subjects of particular interest to Northwest industries, according to C. F. Peirano, controller's dept., Crown Zellerbach Corp., who said mill accounting would be included.

Soundview Men Lose Sons

Two sons of W. A. Owens, sulphite cook at Soundview Pulp Co., Everett, Wash., were killed on bombing missions over Germany—one, David, this year, and the other, Daniel, during 1944. Mr. Owens was formerly connected with pulp mills at Port Alice, B.C., and Bellingham and Shelton, Wash.

Fred White, another cook at Soundview, lost his only son in the service this year.

Two Old Timers Pass

Two old timers with the Zellerbach Paper Company passed from the scene last month.

In Salinas, Calif., Walter J. Eva, 63, a veteran of 40 years' service, many of them as Salinas resident agent, died following a long illness. He leaves a widow.

In Los Angeles, Joe Smith, wrapping paper department sales manager, with the company over 20 years, passed away. He was in his 60's.



RICHARD COLLINS, recently named Manager of Manufacturing, Consolidated Paper Corp., Sun Life Bldg., Montreal. Consolidated operates five mills in Quebec. He was for 12 years manager of the one at Three Rivers and formerly engaged in papermaking in the United Kingdom.



HAROLD G. TIMMIS, recently appointed Acting Manager, Wayagamack Division, Three Rivers, Que., Consolidated Paper Corp., to succeed Richard Collins, now Manager of Manufacturing for the company. Mr. Timmis was Superintendent of Laurentide Division, Grand Mere, Que., and had been at Laurentide since 1923.

Crown-Zellerbach Buys Ostrander Timberlands



CHAIRMAN LOUIS BLOCH in action in upper photos—awarding service pins at Camas:

1. To John A. Ziegler for 40 years' service; 2. To William R. Barber, Technical Director, Central Technical Dept., for 15 years. 3. To Fred W. Collard, for 45 years.

The Stamm family was out in strength—4. Left to right: Ensign Ed A. Stamm, U. S. Navy; his wife; Private Paul W. Stamm, U. S. Army, and Lt. Wm. E. Whitney, Jr. (Don Stamm was also present). 5. On left, proud parents of the three Stamm boys, Ed Stamm, Logging Mgr., Portland, and Mrs. Stamm. Lighting cigaret is Axel Brandstrom, Forester, and beyond him are Mrs. A. G. Natwick and Mr. Natwick, Asst. Resident Mgr. at Camas.

6. Service men-service pin winners (left to right): Staff Sgt. and Mrs. Leon Ochs; Pfc. (behind Mrs. Ochs) and Mrs. Harlan Adair; Mrs. Dan Hallock and her husband, Mechanics Mate 1st Class.

Negotiations have been practically concluded for the acquisition by Crown Zellerbach Corp. of timberland properties from Ostrander Railway & Timber Co., and E. S. Collins Estate, in Clackamas County, Ore. The properties are:

- (1) 13,047 acres in uncut and selectively logged old growth timber.
- (2) 15,743 acres in second growth timber of varying ages.
- (3) 15,678 acres of recent cutovers, part of which is already restocking naturally.

Total—44,468 acres.

Only recently, Crown Zellerbach purchased timberlands from another big Oregon lumber firm, Clark & Wilson.

The Ostrander tract is located on the Molalla River and its tributaries in Clackamas County, and the logs will be hauled over a privately owned 2-lane highway to a log dump on the Willamette River at Canby. Logs will then be towed to the West Linn, Ore., pulp and paper mill of Crown Zellerbach Corp. and to other mills using lumber and veneer logs.

Acquisition of the Ostrander tract ideally located to serve the West Linn mill, will assure a substantial portion of a sustained supply of pulpwood requirements for the mill. Acquisition is one of the necessary elements in the Crown Zellerbach plan which made possible the decision to make extensive postwar change-overs in machinery and product at the West Linn plant, which is partially changing over from newsprint to coated magazine papers. These plans are designed to guarantee continuous long-term employment to neighboring communities.

Crown Zellerbach foresters and timbermen consider the Ostrander tract ideal for permanent sustained yield operation. It will become that company's eighth tree farm.

The Ostrander Railway & Timber Co., is one of the oldest and best known firms in the industry. Few have operated so long under the same name and ownership.

A \$15,000,000 expansion and improvement program was announced in the July PULP & PAPER INDUSTRY, by Crown Zellerbach Corp., demonstrating the progressive policy of this firm in providing modern manufacturing facilities and insuring itself of an adequate supply of raw material for years to come.

Future Planning Is Theme of Camas Dinner

Future planning in timberlands and mills was the theme of Crown Zellerbach Corp.'s service pin dinner at Camas, Wash., July 19.

Louis Bloch, board chairman, who awarded pins to 63 men on leave in army, navy, and other armed services—or their representatives—and to 100 other present employees of the Camas mill, described the emblem as "a symbol of the close tie between you and management."

All of the 340 persons attending the dinner in the Camas high school gym found gifts of tiny, potted Port Orford

cedars at their places.

Discussing "trees for tomorrow," Ed Stamm, logging manager in Oregon and Southwest Washington, said 15 billion feet of timber would be necessary to keep Camas and West Linn, Ore., mills of the company operating at present rates until 2,000 A.D.

He predicted that when the regime of closer use of wood becomes generally established in the west, such fires as the devastating Tillamook burn would become a thing of the past and forests would be "cleaned up." He said it was rare for a tree in the west to live 100

years—a planting of several thousand on an acre decreasing to about 600 in 15 years and only 15 to 30 exceeding the century mark in age.

Resident Manager, J. E. Hanny stressed the millions of dollars worth of war material turned out by the mill despite limiting war circumstances.

W. D. Welsh, of San Francisco, master of ceremonies, praising the record of the entire corporation in war bond purchases said, the division headed by Cecil Dilling—Western Wax Paper Co., Portland, Ore.—had hung up a record of



**GREAT WESTERN DIVISION
THE DOW CHEMICAL COMPANY**

Seattle SAN FRANCISCO, CALIFORNIA Los Angeles

Bear Brand Chemicals for Western Paper Industry

Paper Mills throughout the West Coast area depend on Bear Brand Chemicals, essential products of high quality and uniformity.

Ammonia

Chlorine

Caustic Soda

Sulphur Dioxide

Zinc Hydrosulphite



DOW

**CHEMICALS INDISPENSABLE
TO INDUSTRY AND VICTORY**



12.4 per cent.

For employes in the armed services, 15-year pins went to Nicholas Duback, William Hart, Jack Lennox, William Maple, James McEnry and George E. Wright, and ten-year pins to Lester Duhrkop and Cecil Lawrence. Principal pin awards for other employes were: For 45 years, Fred W. Collard; 40 years, John A. Ziegler; 35 years, Tom Tucker and James L. Burnet; 30 years, John Brunner, and 25 years to Gordon Atkins, Lawrence Blair, Charles Edgley, Manley Fountain, William M. Haney, John Kimberling, Frank Limacher, Price Pickett and Earl Tucker.

Twenty-year pins went to James Bourland, Fred Boylan, Edgar Darrington, Adrian Douglass, Arthur F. Eymier, Jack R. Gould, Gust Goulas, William Harris, May M. Herr, Herbert A. Hewett, William W. Mayes, Bernard H. Michels, Peter W. Rhode, Mary Stacie, Fritz W. Tietz and Clarence Timmons.

Logging Manager Named

Charles Nichols, who for some time has been in charge of the company's Seaside, Ore., operations has been transferred to Seattle, where he will have charge of the company's Northern Washington logging activities, including those at Neah Bay.

Bert Ross, logging superintendent at Siltcoos, Ore., has moved to Seaside to direct operations.

Pacific Mills Plans Permanent Woods Operations

Pacific Mills, Ltd., Ocean Falls, B. C., has established a new headquarters for its logging operations in the Queen Charlotte Islands, at Sandspit, Moresby Island, and plans to maintain a sustained yield timber project there.

The company controls 225,000 acres of timber. Fifty per cent of the log cut is from the Queen Charlotte Islands. The pulp and paper mills consumed 100 million BF a year (equivalent to about 200,000 cords).

The company will continue to contract some cutting, but intends in the future to become a bigger factor in Queen Charlotte logging on its own account. Trucks instead of the A-frames previously employed, will be used. E. C. Atkins & Co. (469 So. Illinois St., Indianapolis 9) provides chain saws for falling.

T. B. Jackson, who was with Crown Zellerbach Corp. in the states for a number of years, is manager of the timber department.

A map accompanying this article shows site of the new Sandspit camp, on a gravel bar, probably future permanent home of the island operations, and its relation to the Ocean Falls plants.

SCENES AT NEW PERMANENT WOODS OPERATIONS of Pacific Mills, Ltd., on Queen Charlotte Islands.

- 1—Falling with Atkins power saw.
- 2—Yarding operations at Slatechuck Creek, on Skidgate Inlet.
- 3—Assembling Davis raft on the inlet.
- 4—Married men's homes under construction at Sandspit headquarters.

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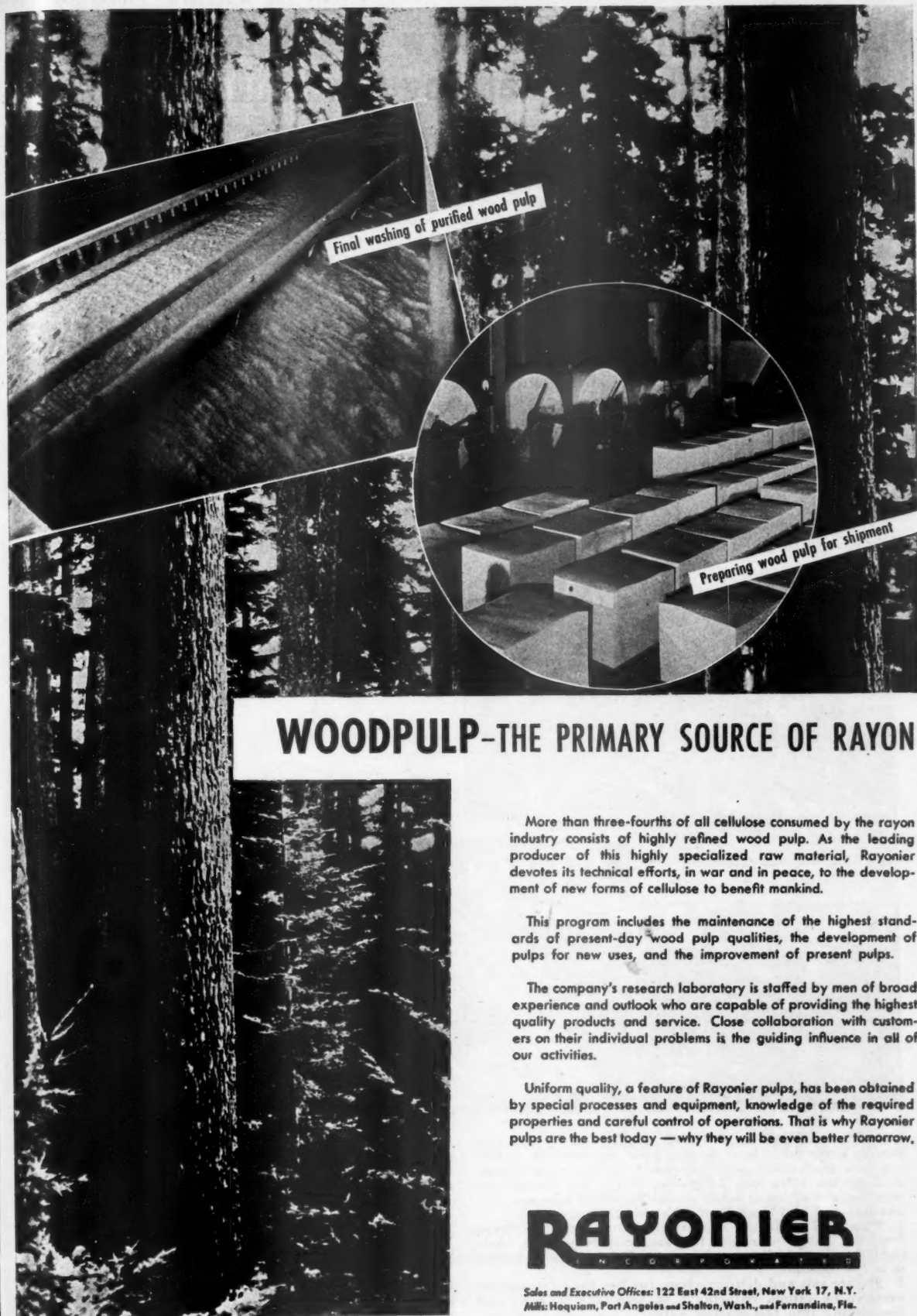
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WOODPULP—THE PRIMARY SOURCE OF RAYON

More than three-fourths of all cellulose consumed by the rayon industry consists of highly refined wood pulp. As the leading producer of this highly specialized raw material, Rayonier devotes its technical efforts, in war and in peace, to the development of new forms of cellulose to benefit mankind.

This program includes the maintenance of the highest standards of present-day wood pulp qualities, the development of pulps for new uses, and the improvement of present pulps.

The company's research laboratory is staffed by men of broad experience and outlook who are capable of providing the highest quality products and service. Close collaboration with customers on their individual problems is the guiding influence in all of our activities.

Uniform quality, a feature of Rayonier pulps, has been obtained by special processes and equipment, knowledge of the required properties and careful control of operations. That is why Rayonier pulps are the best today — why they will be even better tomorrow.

RAYONIER

Sales and Executive Offices: 122 East 42nd Street, New York 17, N.Y.
Mills: Hoquiam, Port Angeles and Shelton, Wash., and Fernandina, Fla.

Longview Fibre Creates New Wealth for Farmers With Specially-Designed Log Pond Equipment

Evidence of a new attitude toward timber emerges from the Longview Fibre Co., at Longview, Wash. The evidence is now complete, in the form of extensive installations near the present mill pond for the handling of farm logs exclusively. Longview Fibre has made the necessary expenditure with an eye toward purchases from farmers and wood lot owners who heretofore have been growing an extra crop upon their lands — without benefit of outlet. Now farmers are the beneficiaries of the newly-adopted Longview Fibre Co.'s policy, because their wood lots have become crop lands — cash producing crop lands — to add to farm income with small extra labor always easy of accomplishment on a farm.

The management of Longview Fibre Co. during the days of short

supply of pulp logs which arise from the stress and strain of war, penetrated deeply into the question of continuing wood supply. Their answer to it in part rests in the nature of the country within a radius of 40 or 50 miles of Longview. Farm lands are meager because of an abundance of small second growth timber. Yet the farm population was large.

The explanation was evident. Farmers cropped all open lands, suitable for agricultural purposes, but statistics proved that farm-owned tillable lands did not approach in area the total of farm-owned lands in the vicinity. That meant that farmers owned lands whereon trees grew abundantly. These remaining lands were not agricultural lands, but natural and actual timber lands. To the farmer, that constituted the "rub." Farm-

owned timber had no outlet.

So, from these facts the men of Longview Fibre drew their conclusions and formulated their answer.

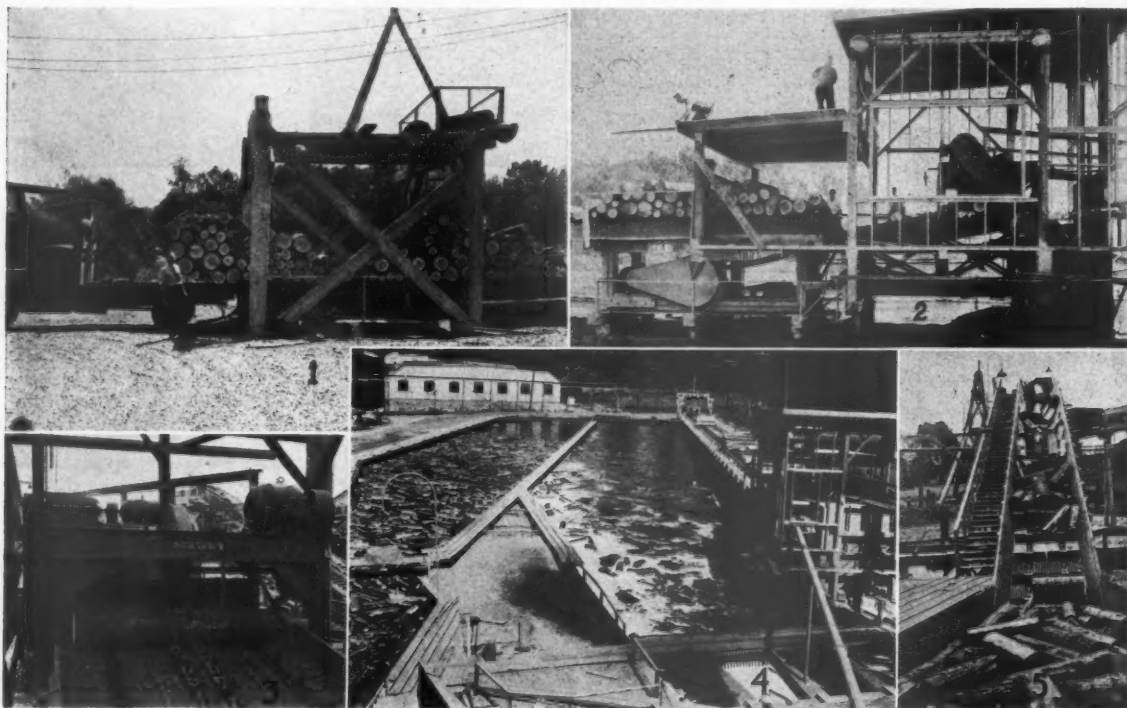
This was it: "We need additional wood. The farmers have that additional wood. Longview Fibre and the farmers can benefit mutually. We will take the wood — the farmers get the cash."

Additionally, small interference with sawmill type timber existed because small second growth red fir is not sawmill material.

And that is the way it works and will continue to work.

Unique Installations

Installations necessary for the handling of this farm lot wood, in eight-foot lengths from 18 down to four inches in diameter, are unique in the west. Wood in eight-foot



HERE'S A DREAM LOG POND COME TRUE! Old-time loggers never could have fancied such an operation as this — a new mechanical merry-go-round for the wood supply at Longview Fibre Co., Longview, Wash. The steadily increasing use of small wood in the Far West becomes economical and highly efficient with this equipment:

1. Pulpwood unloader in operation, bringing logs from truck by means of cables to transfer system which leads to slasher saw. A three-cord load, such as this, is unloaded in a few seconds.

2. Slasher saw and delivery chute for handling farm pulpwood in operation, reducing 8 ft. logs to 4 ft. bolts and discharging into fast-moving water.

3. On slasher saw deck 8 ft. farm logs approach slasher saw singly. After passing saw are dropped into fast-moving water which carries them to discharge conveyor for final move to drum barker.

4. View of pond and storage conveyor in Longview, Wash. Logs coming from slasher saw drop into pond and start moving immediately toward far end where they make bend and eventually arrive at discharge conveyor, from top of which this picture was made.

5. This discharge conveyor takes 4 ft. bolts out of pond automatically and discharges into another conveyor which brings them to drum barker.

What Happens When You Bleach Chemical Wood Pulps

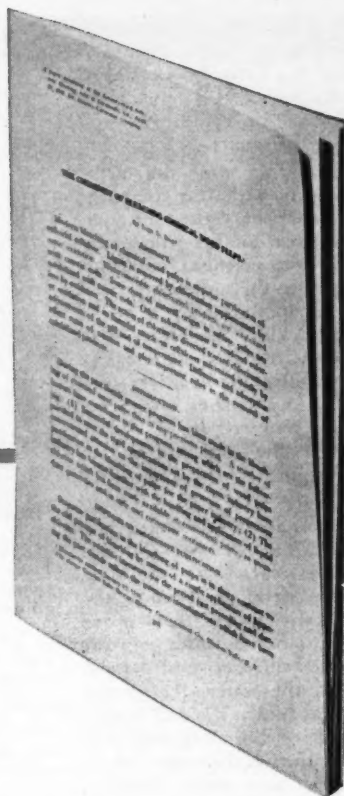
Hooker Bulletin 211 "The Chemistry of Bleaching Chemical Wood Pulps", is an explanation of the reactions involved in the bleaching of chemical wood pulps. It traces the changes in composition as the wood substance is progressively purified. It explains the chemistry of lignin removal, how coloring is removed by solution and oxidation, how harmful effects of chlorine action on cellulose are minimized and the effects of diffusion and adsorption.

Through an understanding of the composition of the pulps and of the chemical reactions by which the coloring matter and other undesired components may be removed, the technique of producing whiter and stronger pulps has been advanced. You will find this bulletin of interest and value. A copy will be sent you when requested on your letterhead.

Other bulletins prepared by our Technical Staff are helping paper makers overcome the handicaps of restricted supplies of needed chemicals. Our Technical Staff has been working with the pulp and paper industry ever since we began supplying the chemicals you use—helping to improve processes, effect economies and raise quality.

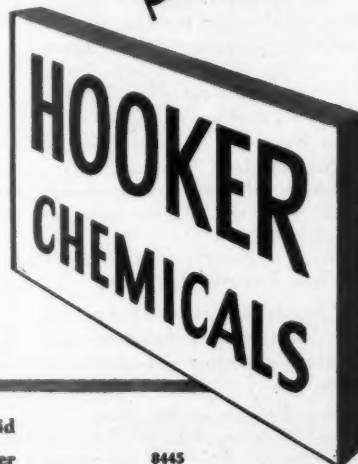
One fundamental fact you and we have found out. It takes quality chemicals to produce quality results. That's why so many use Hooker Chemicals. They know from experience that they can depend on every shipment to be of the same high quality and purity it has always been.

Send for a list of the Hooker bulletins available for the pulp and paper industry. They may contain the answers to some of your immediate problems.



HOOKER ELECTROCHEMICAL COMPANY

2 UNION ST. NIAGARA FALLS, N. Y.
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Wilmington, Calif.



Caustic Soda
Sodium Sulfide

Chlorine

Muriatic Acid
Bleaching Powder

8445

lengths, four to 12 inches in diameter, is used in the Lake states and east almost exclusively; however, 18-inch diameter wood is considerably larger than most southern and eastern mills handle.

So, a farmer, one of the 60 to 75 now dealing with the company, drives his truck of eight-foot logs, loaded crosswise on his truck, into Longview Fibre premises and ultimately comes to the unloading rack. Here a hoist, powered by a 5 h.p. motor "parbuckles" the entire load onto a 300-ft. transfer chain. The logs move along the transfer and come finally to a slasher saw, a 60-inch circular powered by a 50 h.p. motor, where the logs are cut to four-foot lengths. At this point they drop into the pond.

The pond is actually a water conveyor, consisting of two 50-foot wide channels, each 350 feet long, and four feet deep. As soon as the logs strike the water they move along the timbered sides of the pond toward the far end where, moving with the water, they make the bend, and return the full length of the pond to the outgoing conveyor. Activation of the water, which makes this movement possible, comes from four 50-inch adjustable pitch propellers, each powered by a 25 h.p. electric motor; with the four propellers turning 125 r.p.m. circulation of approximately a quarter of a million gallons per minute is attained.

The hydraulic system, including the concrete work on either side of the pond and the return water arrangement, was designed by Cellulose Engineers, Inc., Seattle, Wash. The hydraulic circulating equipment was furnished by Pulp Bleaching Co., also of Seattle.

When the log arrives at the conveyor it is elevated from the water and moves up to second floor height, makes a right angle turn by way of another conveyor, and from there moves to the drum barker. From then on its movement follows the way of all pulpwood.

Other than for hydraulic equipment, Sumner Iron Works, Everett, Wash., built all conveyors involved, together with the slasher saw installation.

New Farmer Income

Two hundred cords of farm logs can be handled per day with the installation geared as it currently operates.

Under the operating plan, the management proposes to have a large number of small suppliers,

Scheuermann Heads Cameron Sales



JOE SCHEUERMANN, who has moved from Chicago to Brooklyn and is now General Sales Mgr., Cameron Machine Co.

and to keep the number of suppliers within desired limits rather than later to have to close down on the amount each individual can supply. In this way no farmer can ever feel that the company is interfering in his economy. Each farmer will have an established quota which he is assured of meeting. The posted price is based on a 128 cu. ft. cord.

The present posted price is \$12.00 per cord, delivered at the plant.

Out of all this the conclusion emerges that Longview Fibre has tapped a brand new community-building source of cellulose materials which generally is non-competitive in the area, and farmers of the area have added a new, dependable crop to income, whether that crop be cut selectively at intervals, or clear cut at least twice in a lifetime.

Fearing, IP Vice-Pres., Dies in New York

Joseph Lea Fearing, 70, vice president of International Paper Co., 220 East 42nd St., New York, died July 28 at St. Luke's Hospital, New York. His home was Greenwich, Conn.

Mr. Fearing had been associated with International since 1899, and became vice-president in 1925 after serving as sales agent and general sales manager.

A descendant of the John Fearing who settled in Massachusetts in 1635 and participated in the establishment of the famed Massachusetts Colony, Mr. Fearing was born in Philadelphia. He was a graduate from the Columbia University School of Mines, and also from the law school of that institution. Surviving are his widow, three sons, three daughters, and 11 grandchildren.

W. B. Wilshusen, president of Cameron Machine Co., 61 Poplar St., Brooklyn, N. Y., announces appointment of

Joseph Scheuermann as general sales manager of the company.

Mr. Scheuermann has been with the company for almost 20 years. For the greater part of that time he served as salesman in the Mid-West and Pacific Coast territory.

In recent years he has been Mid-West sales manager, with headquarters in the Harris Trust Bldg., Chicago. His new duties will mean that he will be located at the Brooklyn main office of the company, which builds winders, rewinders and slitters.

To his friends among executives of paper and board manufacturing industries, he is known best simply as "Joe." He hopes, in the future, to welcome many of them at his new headquarters in Brooklyn.

Louis Bloch Elected

Louis Bloch, chairman of the board of Crown Zellerbach Corp., was elected chairman of the board of Pacific Mills, Ltd., at the annual meeting in Vancouver, B. C., late in July. He succeeds the late A. B. Martin.

F. N. Youngman, vice president of Crown Zellerbach, was elected director succeeding Mr. Martin.

Paul E. Cooper is president of Pacific Mills; J. A. Young, vice president and treasurer; H. C. Pim, vice president in charge of sales; J. H. Lawson, secretary; A. A. McLennan, assistant secretary and assistant treasurer.

Directors, besides those mentioned, are: E. W. Hamber, Mayne D. Hamilton, W. D. Wintemute, C. A. Cotterell.

Bloch Visits Canada

Louis Bloch, chairman of the board of Crown Zellerbach Corp., and a director of Pacific Mills, Ltd., paid his annual visit to the Ocean Falls mill accompanied by President Paul E. Cooper late in July, and attended the Pacific Mills annual meeting in Vancouver July 31.

Thilmany Buys Site For Future Expansion

The Thilmany Pulp & Paper Co. has no immediate plans for use of site of the fire-raised Sangamon Paper Mills site, according to word received by this magazine from C. R. Seaborne, vice president in charge of manufacturing at Thilmany. Both plants are at Kanakauna, Wis.

He said the property was purchased primarily to provide room for future expansion.

Schmidt Lithograph Co. To Expand Operations

The Schmidt Lithograph Co., San Francisco, has purchased the building adjoining the Bryant street plant of the company. The building has four stories and a basement, and will give an additional 96,000 sq. feet.

As soon as the present tenant vacates the building will be used for expansion of present facilities of the company.



STANDARD ENGINEERS NOTEBOOK

Stable, all-purpose oils stop wear on external bearings

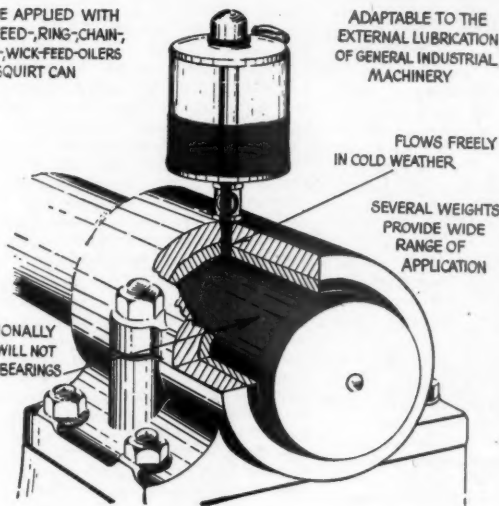
MAY BE APPLIED WITH
DROP-FEED, RING-CHAIN,
BOTTLE, WICK-FEED-OLERS
OR BY SQUIRT CAN

ADAPTABLE TO THE
EXTERNAL LUBRICATION
OF GENERAL INDUSTRIAL
MACHINERY

FLOWS FREELY
IN COLD WEATHER

SEVERAL WEIGHTS
PROVIDE WIDE
RANGE OF
APPLICATION

EXCEPTIONALLY
STABLE. WILL NOT
GUM ON BEARINGS



Because they are carefully refined for stability, Calol Red Engine Oils are always the same and may be depended upon to give constant, uniform protection to external bearings on all general industrial machinery. With a comparatively low carbon residue and low pour test, they have a wide range of application in all atmospheric temperatures.

They are made in five viscosity grades:

Calol Red Engine Oil—11. An all-purpose grade which can be filtered for re-use. It is used on engine bearings, machinery and shafting.

Calol Red Engine Oil—15. Heavier than Number 11 and used for the same general purposes.

Calol Red Engine Oil—18. Used on slow-speed bearings, air cylinders of blowing engines.

Calol Red Engine Oil—20. A heavy grade for heavy-duty machinery bearings.

Calol Red Engine Oil—25. The heaviest grade, used for the same purposes as Number 20.

Tacky greases seal out dust and water

Where rough, grease-lubricated bearings must operate in severe conditions, Calol Multi-Service Greases are recommended. Black in color, these special base greases are blended into a heavy, rugged oil. The lubricant film they provide stands up under the heaviest shock loads. Because they are extremely adhesive, Calol Multi-Service Greases resist high centrifugal action. They are economical and maintain a seal against water and dirt.

There are seven grades of Calol Multi-Service Grease: Numbers 0 and 1, the softest, are non-fluid at ordinary temperatures. Number 0 is particularly adapted for use in cold weather. Numbers 2 and 3 are slightly heavier in consistency and higher in melting point. Numbers 4, 5 and 6 are very stiff.

In the proper grades, Calol Multi-Service Greases are used on small enclosed gears, on ball and roller mine car wheels, heavy-duty chassis, rough machinery bearings and low-speed journal bearings.

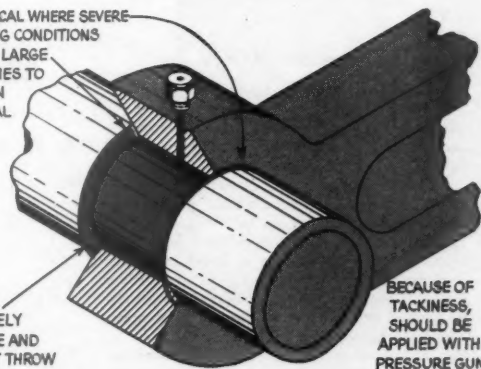
ECONOMICAL WHERE SEVERE
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HIGHLY RESISTANT
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MAINTAINS RICH OIL FILM THAT RESISTS DISPLACEMENT BY SHOCK LOADS



Standard Fuel and Lubricant Engineers are always at your service. They'll gladly give you expert help — make your maintenance job easier. Call your Standard Representative or write Standard of California, 225 Bush St., San Francisco 20, California.

STANDARD OF CALIFORNIA

Zinc Hydrosulphite Treatment of Groundwood*

By HARRY ANDREWS

Control Supt., Powell River Co.

The brightening of groundwood by means of zinc hydrosulphite (ZnS_2O_4) is a Pacific Coast development. It was brought about in connection with the manufacture of newsprint, by two factors:

1. Western Hemlock and Balsam Fir—species predominantly used for groundwood—do not produce as good a brightness, as compared to Spruce, and the color is of a reddish shade. Particularly does this apply to Hemlock.

2. A process discoloration results from corrosion, due to acidity of the groundwood, in conjunction with bacterial action.

Prior to the use of zinc hydrosulphite, alum was commonly employed to alleviate the conditions noted above, but the effects were far from satisfactory.

As far as is known, hydrosulphites were first introduced in commercial application for the brightening of newsprint by Dr. Hirschkind of the Great Western Electro Chemical Co., by what may be termed a normal temperature process, wherein the hydrosulphite was added to the mixed stock immediately ahead of the paper machine. However, a hot process, developed by the Powell River Co., is now the one in general use on the Pacific Coast.

The hot process employs zinc hydrosulphite, only, at elevated temperatures up to a maximum of about 200°F. The stock is washed after the treatment and may stand a considerable time without color setback before being used. The main utilization of this process has been the brightening of Pacific Coast groundwood for newsprint, but it also has application to the manufacture of higher grades.

Description of Process

While at normal room temperature, 70°-80° F., hydrosulphites are found to produce an appreciable brightening effect, a considerable time is taken in exhausting the chemical to bring about a maximum result. At elevated temperatures with a hydrosulphite giving an alkaline reaction, such as sodium hydrosulphite, a greyness develops; but zinc hydrosulphite produces a brightness improvement with increasing temperatures up to approximately 200°F., and the increased temperatures materially shorten the time to maximum brightness. Thus, for any one treatment and temperature, there is a period of maximum brightness. This period is not particularly critical although the color deteriorates if the temperature is maintained beyond. No change in brightening effect, due to consistency, within the range 1% to 8%, has been found.

While groundwood at normal consistencies of 2.5%, and up, with the addition of zinc hydrosulphite, is not particularly corrosive, upon being diluted the corrosiveness increases considerably. The exact cause of this is not known, but undoubtedly sulphurous and sulphuric acids are formed, and these, in

conjunction with the reducing feature, make the white waters particularly corrosive to metals protected by an oxide coating, such as copper or bronze. Cast iron stands up reasonably well; 18-8 stainless steel does not, but molybdenum stainless seems unaffected.

Obviously then, the zinc hydrosulphite treated groundwood requires washing to remove the corrosive effect. The ordinary type of pneumatic drum washer, as used for chemical pulps, was found unsuitable and therefore it was necessary to develop a washer. This was accomplished by feeding the pulp, at about 2% consistency, to the downward rotating side of the drum of a standard pneumatic washer, thereby forming a sheet on the wire ahead of its entry into the vat. The wash water is then added to the vat proper, as well as by means of the conventional showers. Thus, a full displacement wash with high capacities is achieved. Capacity of the washer varies with the consistency of feed, freeness, and treatment, etc., but an 8-foot diameter x 14-foot drum, at 3/4% treatment, has a capacity of 125 tons on our grinder stock at 110CSF. Wash water amounts to approximately 400 Imp. gallons per minute.

In the case of the procedure in brightening groundwood for newsprint, the temperature requirements are met by feeding the zinc hydrosulphite into the stock immediately after it leaves the grinder, where in our case, temperatures something like 140°-150° usually prevail. Seeing that a low percent treatment is all that is required, the retention time at this temperature is very short, something like thirty minutes. After this, the stock is passed through the bull screens at 2% consistency, washed, and then proceeds to the screens in the usual

manner. White water from the cloudy part of the washer is returned to the grinder room as shower and ditch water. The clear port water is effluented to waste. Should a high treatment be desired, it would probably be better to do it on the deckered groundwood, using steam as a source of heat; and washing the stock immediately prior to its use on the paper machine, so as to achieve maximum effect and to avoid all process discoloration.

The effect of zinc hydrosulphite treatments at various temperatures on both the Pacific Coast Hemlock and Sitka Spruce is shown in Table 1.

With respect to the effect of aging, our experience has been for aging without exposure to light, other than that required for examination purposes, the rate of color deterioration is approximately the same as that for the normal groundwood, that is, the degree of improvement largely persists. As an example of color deterioration, figures on partially brightened stock covering a three-year period, are shown in Table 2.

Judging from the fact that approximately the same maximum brightness for both the Spruce and Hemlock results, and that original differences in brightness between untreated and treated pulps largely persist with age, it would seem that the zinc hydrosulphite process renders soluble and removes certain coloring matters originally in the wood. Process discoloration is minimized, too, by keeping iron in the pulp in the ferrous state, thereby allowing it to be removed.

Incidental to our use of zinc hydrosulphite for brightening, we have found a very beneficial effect on slime conditions. Whereas, previously, our slime problem was considerable, now it is negligible. This is attributed to the fact

TABLE 1
INCREASE IN BRIGHTNESS FOR VARIOUS TREATMENTS

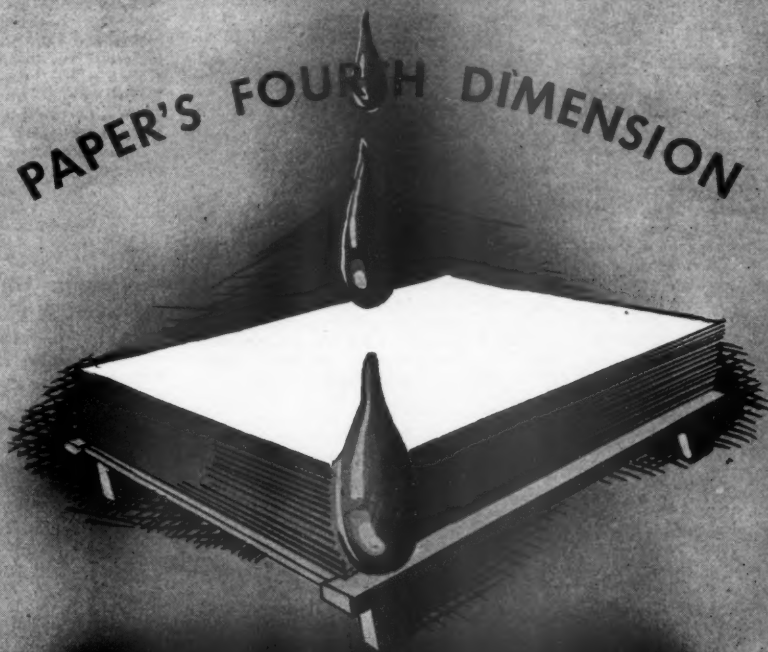
% Zn S ₂ O ₄	Original Pulp	Treatment		Brightness			
		Degrees F.	Hours	Western Hemlock		Sitka Spruce	
				G.E. Units	Increase	G.E. Units	Increase
0.5				53		59	
		80	2.2	57	4	62.5	3.5
		140	0.5	58	5	63.5	4
		180	0.3	58.5	5.5	64	5
1.0		80	4.0	58.5	5.5	63	4
		140	1.3	60	7	64.5	5.5
		180	1.0	60.5	7.5	65.5	6.5
2.0		80	6.5	59.5	6.5	63.5	4.5
		140	1.8	61.5	8.5	65.5	6.5
		180	1.5	62	9	66.5	7.5
4.0		80	15.5	60	7	64	5
		140	2.5	62.5	9.5	67	8
		180	2.0	63.5	10.5	68	9

TABLE 2
EFFECT OF AGING ON BRIGHTNESS
(Unexposed to light)

Time	G. E. Brightness Units			
	Western Hemlock		Sitka Spruce	
	Original Pulp	Treated	Original Pulp	Treated
0	54.5	61	59.5	64.5
3 months	53.5	59	58.0	62.5
1 year	52	57	56.0	60.0
2 years	50.5	55.5	54.5	58.0
3 years	49.5	54.5	53.5	57.0

*Paper presented at 1945 summer meeting, Technical Section, Canadian Pulp and Paper Assn., at Quebec, Canada.

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that the zinc hydrosulphite treatment in itself apparently retards bacterial development and the residual chemicals following washing control the growth also.

Manufacture

Zinc hydrosulphite is manufactured from zinc and sulphurous acid, in either a batch or continuous process. Zinc, in the form of zinc dust, is commonly employed.

The reaction must be carried out under controlled conditions and the heat of formation continuously removed. The final product should be kept at a temperature below 60° F., otherwise loss of strength results; for instance, with a 10% solution, the breakdown amounts to 6% of the strength in 24 hours at 75° F., whereas it is only 0.5% at 60° F.

Generally, a sulphurous acid of about 7% SO₂ content, that gives a 10% zinc hydrosulphite solution, is used, but that is not obligatory. However, if too dilute a solution is manufactured, efficiency suffers, and if too concentrated, crystallization problems result.

Obviously, in the manufacture of zinc hydrosulphite, a sulphite mill is of considerable advantage in supplying a strong SO₂ solution, relief gas from the digester providing the strong gas necessary.

The procedure for making a 10% zinc hydrosulphite solution, by the batch system, using zinc dust, is briefly, as follows.

A zinc dust slurr is made in a tank, equipped with cooling coils and agitator. To the zinc dust slurry is added sulphurous acid solution of a strength depending upon the desired strength of the final product, at a rate that allows of removal of the heat of reaction. Following this, the excess zinc dust and small amounts of zinc sulphite produced are settled out, the excess zinc dust being used in subsequent batches, and the cooled zinc hydrosulphite solution is stored under a film of oil to prevent oxidation. An efficiency of approximately 97% based on the available zinc, is achieved under proper control.

Costs

Obviously, in the particular process in question, it is desirable to manufacture the zinc hydrosulphite on the spot. The costs are mainly influenced by those of the raw materials, but with zinc dust at 5c per pound and sulphur at 1.1c, zinc hydrosulphite can be manufactured for 3c per pound, including labor, maintenance, etc. Of course, there will be some variance from this, depending on the amount manufactured. Just what the completed brightening treatment will cost will depend upon the treatment and tonnage involved.

It will be appreciated that out experience was gained in the zinc hydrosulphite process in its application to West Coast woods. It is not known what results would be obtained on species from other areas. However, that may be determined in simple laboratory procedures, for it is found that laboratory results are duplicated in practice.

Fox Is Personnel Mgr. At Columbia River Mills

New personnel manager of Columbia River Paper Mills, Vancouver, Wash., is Charles Fox, who, prior to his appointment this position, was for 12 years personnel manager of Hawley Pulp and Paper Co., Oregon City, Ore.



C. R. P. "DICK" CASH, previously a superintendent in Southern United States and on Pacific Coast, who has accepted position as Superintendent of Brown Corp., at La Tuque, Quebec (a 420 tons-per-day sulphate pulp mill, bleached and unbleached).

MRS. CASH, with him in above picture, returns to her homeland in moving to La Tuque. She was born in Canada—at Bernays, B. C. They lived for past several years at Canton, N. C., where he was Sulphate Supt. for Champion Paper & Fibre Co. He was formerly at St. Regis and St. Helens Pulp & Paper Co. in Pacific Northwest.

W. L. FAILING, Asst. Gen. Mgr., Fir-Tex Insulating Board Co., St. Helens, Ore., since March. He was Maintenance Engineer, Crown Zellerbach Corp., Camas, Wash. for nine years.



Stenstrom on Trip To British Columbia

David G. Stenstrom, who has been serving as assistant newsprint administrator for the Canadian government at Montreal for the past two years, has been visiting British Columbia.

Mr. Stenstrom, formerly associated with Pacific Mills, Ltd., and other pulp and paper companies on the West Coast, still regards Vancouver, B. C., as his home town.

Foley in California

Harold Foley, president of Powell River Co., was a visitor to California in late July.

Canadian Technical Section Organizes in Far West

British Columbia pulp and paper men will have a more direct contact with the technical section of the Canadian Pulp and Paper Association as a result of the recent visit to the West Coast of Douglas Jones, secretary-engineer of the section, whose headquarters are in Montreal.

Branches of the organization were formed at Powell River and Ocean Falls, and staff members of pulp and paper companies in Victoria, New Westminster, Port Mellon, Woodfibre and Port Alice will

also be represented.

At the Pacific Mills, Ltd., in Ocean Falls, 24 members have already been enrolled in the local branch, and 30 have enrolled at Powell River Co.'s mill. Each branch will have three members on the executive committee of the section. Most of the members are operating superintendents, members of the engineering and laboratory staffs, representing an excellent cross-section of the industry. Membership in the branches is not confined to any particular category of employment, however, the only stipulation made by the technical section being that the branch chairman shall be qualified members of the section.

An organizing committee for Western Canada is being appointed and it will elect an executive for the Pacific Coast branch. The western branches will have their own constitutions based on a draft prepared by the technical section in Montreal and brought to the coast by Mr. Jones.

For Mr. Jones, making his first visit to the Pacific Coast, it was an enlightening experience and he expressed surprise at the extent of development in the industry.

Jesse Lewis Elected

Jesse R. Lewis, superintendent, Coos Bay Pulp Corp., Anacortes, Wash., was recently elected vice president of the Anacortes Rotary Club.



JACOB ("JAY") EDGE, Vice President in Charge of Sales, Dowington Mfg. Co., Dowington, Pa., and designer of improvements in papermaking machinery, died suddenly July 24 while fishing. He was long a prominent figure in the Delaware Valley pulp and paper industry region. His widow, a son and two daughters—the latter three in service—survive.

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Weyerhaeuser Stresses Development--Not Research; Plastics Products are Possibilities

CLARK C. HERITAGE, who was national president of TAPPI ten years ago and who has long been prominent in the paper and wood-utilizing industries, now works in a wide field of operation in the development of new wood-base products for Weyerhaeuser Timber Co., growers and manufacturers of forest products.

The company, as one of the oldest and largest in the overall bracket of forest industries, not only logs and manufactures lumber, pulp and other wood products, but as owner of extensive timberlands, it has taken a progressive position in organizing these lands in Tree Farms and placing them under forest management for the continuous production of forest crops.

The development work headed by Mr. Heritage is closely identified with the company's forest management objectives and in essence may be described as a continuing endeavor to increase the realization per acre of forest land harvested, together with diversification of products manufactured and merchandised.

The company's attack on the vast problem, in concert with affiliated corporations, began a quarter of a century ago and one result was the creation of the Wood Conversion Co., Cloquet, Minn., now a well known manufacturer of wood-base insulation products. The company is one of the major stockhold-



DEVELOPMENT DEPARTMENT, Weyerhaeuser Timber Co., Longview, Wash., serving that company's Washington and Oregon operations. It is under direction of Clark C. Heritage, prominent in TAPPI affairs over many years.

ers in the Cloquet organization and benefits by the Wood Conversion Co.'s own well established development work.

Mr. Heritage divides his time between Cloquet and the Development Department established by Weyerhaeuser Timber Co. in a specially designed laboratory building completed more than two years ago at Longview, Washington, on the site where the company operates a sawmill and sulphite pulp mill. The company's Pulp Division has its own Central Research Laboratory at Longview, also. This is headed by Dr. Ray Hatch, who also has been prominent in TAPPI affairs for years. These two units, although operating independently, coordinate their programs and cooperate closely when projects are of mutual interest.

Mr. Heritage's Views

In view of Mr. Heritage's long experience in wood utilization, his views on its postwar possibilities are of timely interest.

"Increased production of pulp or paper plastics can only be attained by getting quality for less cost than other plastics or better quality for the same cost," he told PULP & PAPER INDUSTRY in an informal interview recently.

"A tremendous market is possible where costs can be cut," he said. "The best possibilities for wood or pulp or treated papers are in the larger plastic forms which may be turned out for large structural materials."

He pointed out that the ratio of costs for elements which can be

changed to those that cannot, may hold many of the answers, and illustrated his point by mentioning the possible reduction of phenol cost as bringing down with it the cost of plastics made with phenol.

Mr. Heritage was for many years associated with the Oxford Paper Company, Rumford, Maine, and before that with the U. S. Forest Products Laboratory, Madison, Wis., from 1927 to 1929. He joined the Weyerhaeuser organization in 1937.

R. D. Pauley, who is in direct charge of the Development Department in Longview, came there from the department at Cloquet.

The company prefers to place emphasis on "development" rather than "research."

The Development Department at Longview maintains a staff of 30 to 35 persons, housed in its own modern two-story building designed and erected in 1942. The department is concerned with all the technical fields dealing with utilization of the standing forest, whether as structural products, fiber and fibrous products, chemicals (and products therefrom), or plastics materials.

There has thus far been one publicly announced product of the Development Department, namely, a range of thermosetting hot compression molding compounds of a phenolic nature. They are quite similar in physical properties and performance to the compounds commonly used by molders although they are produced by new processes. Work on these compounds was begun in 1942, and they are now being marketed in small quantities on the Pacific Coast.



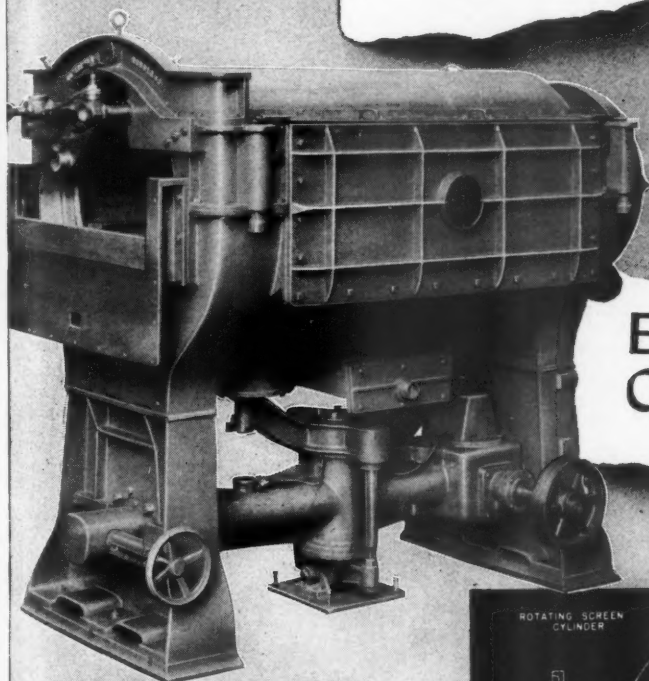
CLARK HERITAGE: "Best opportunities in plastics for pulp or treated papers are in larger forms for large structural materials."

Gentle Screening Action
Correct Stock Agitation

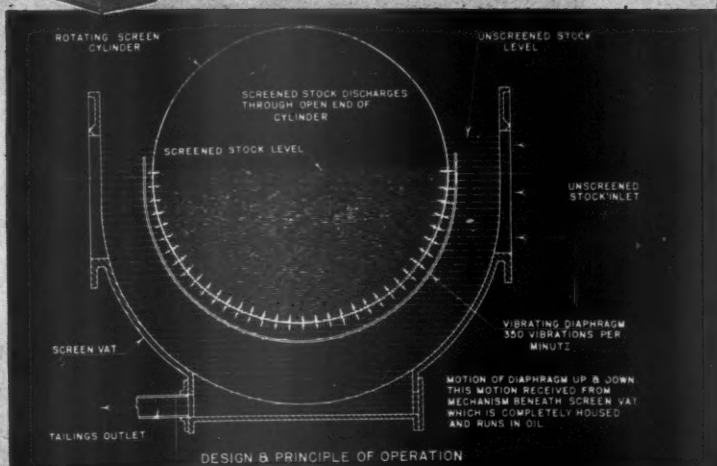
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An editor of PULP & PAPER INDUSTRY was on the spot and took these pictures one day this summer in hemlock looper-devastated timber of Crown Zellerbach Corp., two miles above the Cannon Beach-Seaside, Ore., highway. Infested timber must be logged and used within two years or it deteriorates beyond pulping value

1—At 1:30 P.M., looking down from high lead landing. Picture originally taken to show where crews were logging to save looper-infested timber. The editor then didn't realize how — a few minutes later—this picture would fit into fire story.

2—Part of the area shown in Photo 1. Smoke is seen. Time: 2:10 P.M.

3—Someone yelled fire in the logging operation nearby. Time: 2:25 P.M.

4—Crown Zellerbach tank and fire truck, fully equipped, at the high lead landing, from which Photo 1 was taken. It is five miles by winding road to scene of fire below.

5—PULP & PAPER INDUSTRY editor gave right of way (It seemed safe thing to do, anyway) to the fire truck; two tractors, one with bulldozer; Gunner Bowman, logging foreman, in his pick-up truck, and camp bus loaded with a score of loggers, now turned fire-fighters. By the time our editor reached scene, driving goodly clip, the men already had strung out

600 ft. of hose, with gasoline pump far in the lead. 6—Hose is carried over poor trail of 300 yards.

7—Then men race over last 150 yards across fallen timber. It is hard going—along and over big logs.

8—At last. The fire. A punky cedar stump—12 feet high—and its badly shattered tree—ablaze from end to end. Men were already at work with shovels, mattocks and axes, isolating fire.

9—Meanwhile, the gasoline pump is placed at a little stream near the fire and will begin pumping water through long hose.

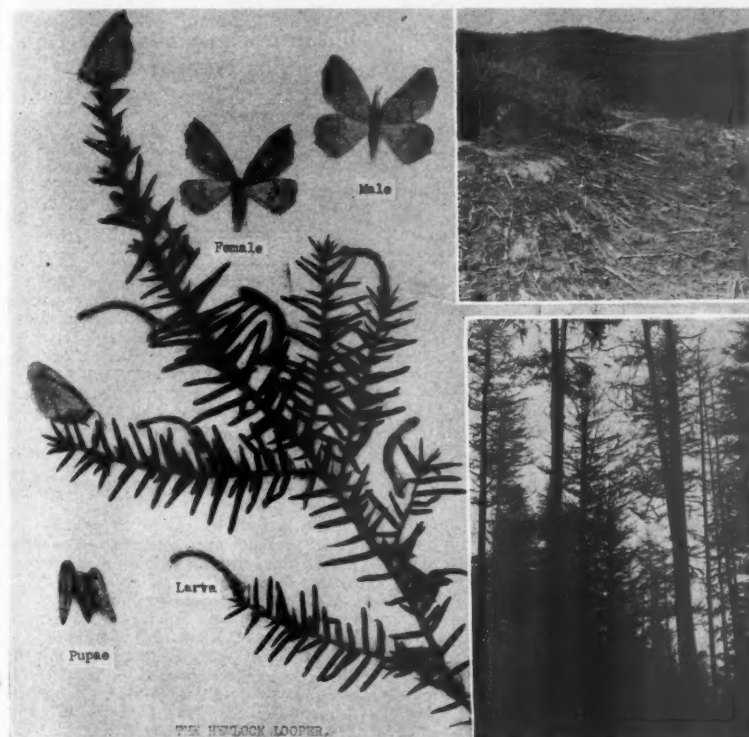
10—Compare height of men with blazing stump.

11—3:25 P. M. Water reaches fire. An Indian back pump is played by a man against stump at left. The main pump stream is directed against the larger blaze at right.

12—3:50 P.M. Fire dies under application of water. Ground men are left to clear debris down to damp earth. Tractors, fighting way to fire, are halted. About two sections of downed timber, in looper-damaged area thus were saved from another all-consuming enemy—fire.

How did it start? Probably a dropped cigarette or an emptied pipe. For most of an afternoon, a crew of 25 men and tractors and other equipment were tied up in fighting fire—were taken off productive time in logging.

Pests and Fire—Two Great Enemies of the Forest



Views of Hemlock looper devastation in Crown Zellerbach timber. Also shown are closeups of the pest whose life cycle is egg—larva—pupa—moth—egg again. We name the egg as the first stage, arbitrarily. We're not going to start that old argument again—what came first. The moth is buff-colored with 1½-inch wing spread.

Upper right view is of logged area. In upper left of this picture, where road forms a Y, note gray appearance of defoliated area.

Lower right—This area is so seriously defoliated by the looper moth in larva stage that only branches and trailing moss are evident. Sky normally would be shut out by foliage.

Spraying of Oregon Forests Combats Hemlock Looper

Spraying from an airplane of thousands of acres of timber area in Clatsop County, Oregon, to quell the devastations of the insidious hemlock looper, was to have been completed by this month.

About 40 million BF (equivalent to 80,000 cords) of timber, mostly pulpwood, in an area of 2,000 acres, had been killed by the pest. Full extent of the infestation is over 12,000 acres. About 85% of the timber belongs to Crown Zellerbach Corp. The State of Oregon had to alter its laws so the state could assume control of combatting activities and pay 25% of costs.

It had been planned to use DDT, the newly discovered war insecticide, over 1,700 acres. A much larger area was to be sprayed with lead arsenate, which is not under such stringent restriction at present. More details on the infestation and the nature of the pest—a moth which, while in larva stage, denudes the forest understorey—were given on page 45, June 1945, issue of PULP & PAPER INDUSTRY.

Meanwhile cutting of affected pulpwood is proceeding and must be completed in two years in order that it be in a satisfactory state for the mills.

Two daring pilots shown in the accompanying picture with a Waco plane, sprayed the forests from a height of within 50 feet of tree tops. Early morning flying only was done, because in the afternoon the air became too rough for the job. There was only a quarter-mile strip for many landings and take-offs in

each flying day. No parachutes were carried—they would have been useless at such low altitude.

DDT was dissolved in xylene and mixed with fuel oil, which acts as a carrier and adheres. Up to 1400 gallons were prepared for each day. Lead arsenate, also mixed with fuel oil, made a 1500-gallon supply for a day. With only 60-gal. tanks, each plane had to make many runs.

The looper larvae die from paralysis in the vicinity of DDT. But it must come in contact with the lead arsenate.

Pilot Ausve, flying over his area, extending 15 miles from the strip, put out 25 gal. per min. of DDT at 100 MPH speed. Each flight he sprayed 30 acres on a 60-ft. wide strip four miles long in two minutes. Pilot Allison spread lead arsenate over an area only five miles from the air strip but had to apply more per acre.

Bug Kills Bug— So Paper Co. Saves Money

An infestation of blackheaded budworm in the forests of Vancouver Island threatened to cause widespread damage to young growth among the hemlock stands of British Columbia Pulp & Paper Co., but nature came to the rescue at the eleventh hour.

When, after severe infestation had taken place last year, the operators and government agencies planned a campaign against the budworms, it was decided to spray the area from the air with calcium arsenate and, where possible, with the famous wartime insecticide DDT. Arrangements were completed for a plane, and then reports from the tim-

ber country indicated that the situation had already been saved.

A natural parasite as well as a wilt disease which causes the tissues of the budworm to liquefy and disintegrate have developed, and this combination is apparently accomplishing as much if not more than any artificial spraying.

The use of DDT in the woods of the Nipigon Lake area in Ontario and other sections of eastern Canada has been resorted to on a large scale this year in an effort to check the budworm and other infestations in eastern Canadian pulpwood forests.

Fires in West Worst In Many Years

The driest summer since the war began has brought destructive fires in Washington and Oregon. It is recalled that in the first years of U. S. participation in the war, Jap planes dropped incendiary bombs in the forests, but excessive dampness fortunately held fires to a minimum in those years.

Considerable publicity has been given in the press to a fire over old historic Tillamook burn in Oregon, where some recovery and use of timber had been undertaken in recent years. The new fire, still jumping lines and being fought by 3,000 soldiers sailors and loggers, has burned more than 100,000 acres in a total area of over 140 square miles.

Actually, only about 3% of destruction is green timber, the rest being snags, fallen trees, rubbish, etc. This is Douglas fir country—timber for lumber principally, not pulp.

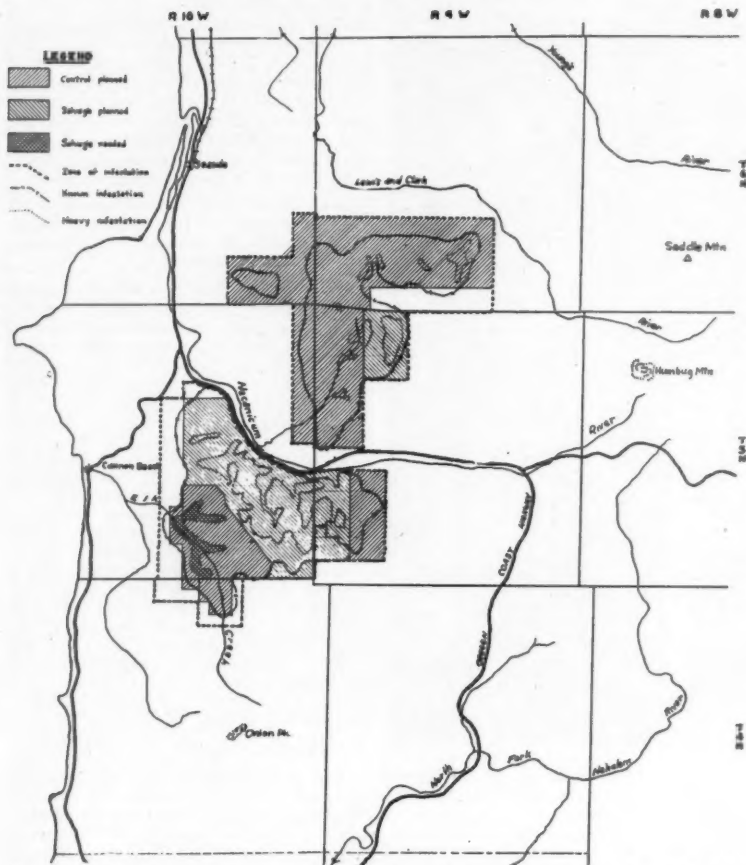
Other fires have been dangerous, one in Washington's Pacific County burning 7,000 acres and another in Oregon's Polk County burning 12,000 acres.

Destroys 35 Years' Supply of Pulpwood

The most destructive enemies of Canada's pulpwood forests are fires, fungus, disease and insect infestation, according to Commander K. S. MacLachlan, president and managing director of Standard Chemical Co., Toronto.

The average annual drain on the Canadian forests as a result of insect depredations and disease is estimated at 700 million cubic feet of merchantable timber, said Commander MacLachlan. In the spruce budworm epidemic which lasted from 1909 to 1920, 78,000 square

PROJECT PLANNING MAP HEMLOCK LOOPER OUTBREAK - 1944



Map showing extensive area near Northwest Oregon coast, where stands of pulpwood timber have been killed by the insidious hemlock looper.

miles of forest were infested and 200 million cords of softwood timber were destroyed.

"The present infestation which has lasted since 1930," he said, "has spread over 247,380 miles. There is no assurance of controlling the outbreak. It is the considered opinion of the best informed authorities that losses from the present epidemic will equal the losses from the previous one, namely, 200 million cords.

"At the current rate of consumption by the Canadian pulp and paper mills this represents a loss of 35 years supply of pulpwood. At an average stumpage rate of \$1.25 per cord this means a loss of \$250 million of provincial revenue."

"Other insects are also at work—the spruce sawfly which from 1930 to 1942 infested 20,000 square miles of forest, and the jackpine budworm which, beginning in 1938 and still active, has infested 60,000 square miles."

Large-Scale Experiments On Effects of DDT

Large-scale experiments in aircraft spraying with DDT of woodland areas to determine effects of this powerful new insecticide on useful insects, fish, bird and other wildlife are being con-

ducted this summer in Pennsylvania, Maryland and Nebraska forests.

Cooperating agencies include the bureau of Entomology and Plant Quarantine, the Forest Service and the Fish and Wildlife Service.

Major aim of the experiments is to determine how DDT insecticides may affect the biotic balance of nature when sprayed over large forest areas; whether there are permanently harmful effects from use at dosages which will control gypsy moth and other forest pests, the extent of this damage on parasites and other natural enemies of such pests as well as the damage to honeybees and other pollinating insects, and the extent

Central Dusting Co., Yakima, Wash., sent two Waco planes, with 60-gallon spray tanks and spraying devices to fight the hemlock looper in Oregon. The fliers, shown here, are Robert Allison (left) and Albert Ausve.



of injury to birds, reptiles, mammals and other wildlife from feeding on insects poisoned with DDT, by eating foliage covered with the spray residue, or by being deprived of food through extermination of insects.

Shelton Reopening to Boost Rayonier Output 25%

Demand for wood cellulose taxed to capacity the facilities of Rayonier Incorporated but the reopening this fall of the Shelton, Wash., Division will increase that company's production by about 25%.

President Edward Bartsch made this forecast in a letter to PULP & PAPER INDUSTRY. He added:

"Many of our customers are planning to expand their manufacturing facilities, but it is estimated that North American pulp suppliers will have sufficient capacity to meet the requirements of the domestic market upon completion of plant changes now under way."

He pointed out that 75% of Rayonier's production goes to the rayon industry and that a "continued increase in consumption" is expected for rayon, cellophane, photographic papers and other products using Rayonier pulp and paper.

"Utilization of rayon in tire cord is of great importance and it is certain that rayon will continue to play a major part in this field," he said.

Rayonier's consolidated net profit for the year ended April 30, after all charges, was \$1,839,126 compared with the previous year's figure of \$1,688,709. Stock earnings increased and sales were up 13.8% in dollars and 4.4% in tonnage. Sales for 1944-45 were \$25,969,823.

Sgt. Don McPhee's Address

Sgt. Donald P. McPhee, former assistant to Manager Russell J. LeRoux of the Everett, Wash., pulp mill, Weyerhaeuser Timber Co., is in Germany and expects to be there some time.

His address: ASN 39217116, Co. A-3187 Sig. Serv. Bn., APO 655, c/o Postmaster, New York, N. Y.

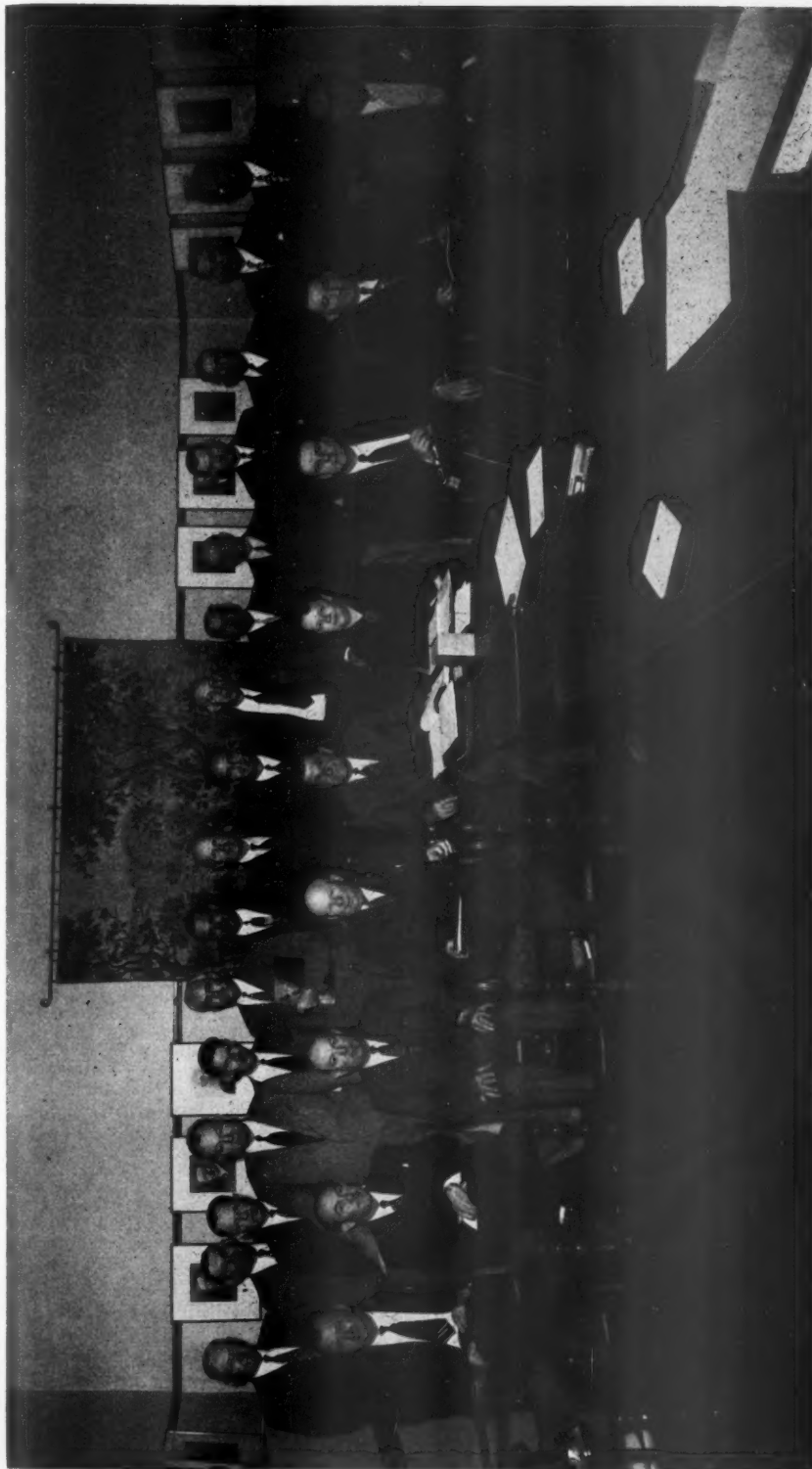
Howard Gerber Makes Trip To Pacific Coast

Howard Gerber, of Williams-Gray Co., Chicago, representing Lindsay Wire Co., and other lines, visited Pacific Coast mills during the latter part of July and returned to his headquarters via Canada.

Ship Ahoy, Eric!

Eric Ericsson, technical director for the Puget Sound Pulp & Timber Co., who spent his vacation on Orcas Island, near Bellingham, Wash., is the proud owner of the newest sailboat on Bellingham Bay.

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Sanford, Resident Manager, Sumner, Wash.; V. O. Basom, Resident Manager, Port Angeles, Wash.; W. W. Burke, Office Manager, Stockton.

Standing (left to right): M. J. McAuliffe, Plant Supt., San Francisco Div.; Claude Stitt, Asst. Resident Manager, Antioch, Calif.; J. B. Martin, Jr., Resident Manager, Portland; F. F. McClintock, General Manager, Independent Paper Stock Co.; L. V. Baker, Office Manager, Glass Containers; H. L. Miller, Office Manager, Vernon, Calif.; Don Hay, Office Manager, San Francisco Div.; Oscar Hallburn, Resident Manager, Southgate, Calif.; C. E. Chapel, Office Manager, Southgate, Calif.; Jack Morris, Office Manager, Port Angeles; M. A. Rodriguez, Office Manager, Antioch; Harry Hagedorn, Reporter; L. O. Fox, Office Manager, Sumner, Wash.; Roy Gunnelt, Union Representative of Retirement Plan Committee; E. E. Olfson, Office Manager, Portland; Walter Daley, Assistant Secretary, Independent Paper Stock Co.

MOST OPERATIONS AND ADMINISTRATIVE EXECUTIVES FROM TEN DIVISIONS OF FIBREBOARD PRODUCTS INC. are in this picture. It was taken at recent conference in Stockton, Calif. Mill managers and office managers from the six board-making mills and two additional converting plants on the Pacific Coast, as well as the newly acquired glass containers plant, and sales company attended. New retirement plan for employees, effective Sept. 1, was discussed.

Seated (left to right): P. H. Keller, Stockton, Calif., Resident Manager; R. C. McCrystal, General Manager, Glass Containers Div., Los Angeles; Bruce F. Brown, Manager, Southern District; N. M. Brishols, Vice President in charge Operations; T. Noel Bland, Vice President and Assistant General Manager; Dorothy Hanson, Assistant Secretary-Treasurer; M. E.

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Puget Sound Mill Alcohol Should Be Used in West

Utilization of the alcohol made at Puget Sound Pulp & Timber Co. in a Pacific Coast industry offers a solution to the problem of continued economic operation of the alcohol plant after the war, Erik Ekholm, general superintendent of the Bellingham, Wash., mill told the Kiwanians of that city in a recent talk.

While not ruling out the possibility of shipping as far as the Middle West on a competitive basis, Mr. Ekholm stressed that shipping costs would give the western mill a distinct advantage in the Pacific Coast market. Production of alcohol from the mill effluent at Bellingham would be no more expensive than the manufacture of alcohol from molasses, he said.

But shipping rates are too high for it to be shipped to the Atlantic Coast and compete with alcohol made there.

He said the Pacific Coast offers ideal conditions for new chemical industries which would use alcohol.

He remarked that the government's million dollar investment in the Bellingham alcohol plant would be paid off before the end of this year, not in cash, but in being able to buy the product cheaper than from other sources.

In answer to a question, he said the plant's daily output of 6,500,000 gals. of high test alcohol could be converted into 70,000 quarts of high proof gin, which at present rates would produce \$130,000 in liquor taxes. Bellingham's "alky," he said, is identical with the alcohol produced from grain. Using it for potable beverages after the war is one of the most remote of postwar possibilities—but nothing is ruled out.

Alcohol-From-Sawdust Will Be Made in October

The government-financed Springfield, Ore., plant, which will utilize wood waste in manufacture of alcohol, will be in production about October 1, according to company officials. The project at Bellingham, Wash., where Puget Sound Pulp & Timber Co. makes 190-proof alcohol from mill sulphite effluent, was the first such project in the forest industries in the west.

It began production in March and a detailed, illustrated description of the plant was published in the June issue of PULP & PAPER INDUSTRY.

Alcohol Plant Supt. Is Back in Homeland

Construction of the sulphite effluent alcohol plant at Puget Sound Pulp & Timber Co., Bellingham, Wash., brought Donald Reed back to the Pacific Coast after an absence of 16 years. Mr. Reed is the alcohol plant superintendent. He took advantage of his new location by visiting his old home in Centralia, Wash., during his vacation.

James Hooker Returns

Pvt. James H. Hooker, who has spent the past 15 months in the Army's Hammond General Hospital, Modesto, will be back on the job Aug. 10 as wrapping paper sales manager for the Pacific Coast Paper Co., San Francisco.

Pvt. Hooker, drafted more than two years ago, had been in the Army less than six months, when he was shipped to the Anzio beach head, and was severely wounded almost as soon as he landed.

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Acid Making In the Sulphite Pulp Industry

By A. H. LUNDBERG*

CHAPTER IV (Concluded)

(This is the final installment of Mr. Lundberg's articles which began in Jan., 1943, and appeared in most issues since then. It is hoped that, when paper is available, it can be published in book form).

VIII LIMESTONE TOWER CALCULATIONS

It was pointed out earlier that the limestone in the towers has two functions to fulfill. The limestone represents the packing material and supplies the "base" to the acid. The solubility of sulphur dioxide in bisulphite solutions was discussed in Paragraph XX, Chapter I, as was the effect of temperature on the composition of the acid produced. This paragraph will deal solely with the factors influencing the tower size.

It is well known that the towers are loaded with limestone from the top. During the operation the stone is consumed and gets smaller and smaller so that at the bottom of the tower will be found but minute particles. As was learned from the previous paragraph, the coefficient of transfer or absorption is in direct relation to the particle size. The stone added at the top is necessarily large to allow for shrinkage through the tower, and to keep the overall resistance to the gas flow low. The type of limestone used also affects the absorption.

The gas rate is kept relatively low not only to allow time for reaction, but also to protect the towers. High gas velocity means small tower area, and as the towers are usually loaded once a day, the danger of having to drop the rock too far a distance is under-

standable. The efficiency of the tower is also lowered, as it will be operated for long periods with a materially reduced height packed column. Thus a gas rate of 0.5 to a maximum of one cubic foot per second per square foot tower area is recommended.

The pressure drop in a limestone tower varies, depending upon conditions of the tower and the rock.

The constant for limestone can, however, under normal conditions be set at 0.0000094 or about the same as for coke given in Table XXIX.

Thus a 10' diameter tower having a packed column of 60' will with a gas rate of one cubic foot per second per square foot give a pressure drop of

$$P = fhv^2 \div a^2$$

$$P = 0.0000094 \times 60 \times 4712^2 \div 78.54^2 = \text{about } 2''$$

The difficulty in designing a limestone tower is enhanced by the fact that the towers must be operated according to mill demand for acid.

The towers are, therefore, operated at times above, and at other times below, their rated capacity. For a fixed gas and liquor flow, however, the design of a limestone tower follows the same general rules as the one specified for SO₂ absorption in water.

The literature does not give much data about tower performances but Dr. Humm studied the SO₂ absorption in a tower having a packed column of 92 feet. He

*Seattle, Washington. Mr. Lundberg is Western Manager, G. D. Janssen Company, New York City.

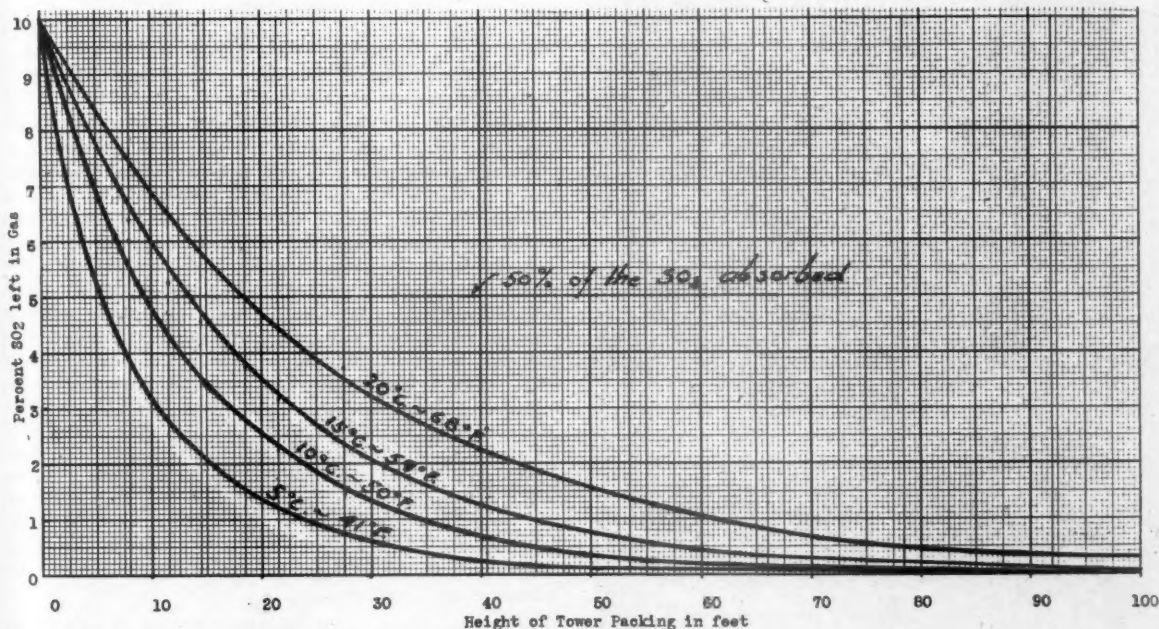


CHART XXXIX

Showing rate of SO₂ absorption in a Limestone Tower using a 10% SO₂ burner gas.

Pulp

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used a 10% SO_2 burner gas obtained from pyrites roasting. The gas and liquor rates were kept constant. The only variable was the water temperature. The tower used, however, was of conical shape, i. e., the diameter was larger at the bottom than at the top, thus the gas and liquor velocities were not the same throughout the tower. That should, however, have minor influence on the final result. For gas concentration and acid composition see Tables XXX-A and -B and Chart XXXIX.

TABLE XXX-A

SO_2 ABSORPTION IN A LIMESTONE TOWER

Testing Sta-
tion in Feet
from Gas
Inlet

	Gas Strength % SO_2			
	5°C-41°F	10°C-50°F	15°C-59°F	20°C-68°F
0'0" —————	10.21	10.05	10.10	9.95
8'0" —————	3.78	6.08	6.39	7.48
11'6" —————	2.53	4.71	5.24	6.55
14'6" —————	1.92	4.13	4.54	6.01
18'6" —————	1.37	2.84	3.72	4.95
21'6" —————	1.01	2.27	3.14	4.47
27'6" —————	0.74	1.46	2.38	3.72
40'6" —————	0.35	0.64	1.40	2.62
53'6" —————	0.13	0.29	0.62	1.81
66'0" —————	0.04	0.11	0.28	1.29
78'6" —————	0.018	0.05	0.12	0.83
92'0" —————		0.014	0.05	0.31

TABLE XXX-B
ACID COMPOSITION

	T. SO_2	C. SO_2	T. SO_2	C. SO_2	T. SO_2	C. SO_2	T. SO_2	C. SO_2
0'0" —————	3.50	0.70	3.50	1.30	3.50	1.44	3.50	1.69
14'6" —————	0.66	0.13	1.46	0.40	2.02	0.64	2.20	1.00
27'6" —————	0.26	0.03	0.50	0.14	0.82	0.33	1.28	0.62
78'6" —————	0.006	0.002	0.02	0.01	0.03	0.015	0.28	0.11
	True Free SO_2		True Free SO_2		True Free SO_2		True Free SO_2	
0'0" —————	2.10		0.90		0.62		0.12	
14'6" —————	0.40		0.66		0.74		0.20	
27'6" —————	0.20		0.22		0.16		0.04	
78'6" —————	0.00		0.00		0.00		0.06	

These data are very interesting. They definitely show that the absorption of SO_2 is not at a uniform rate throughout the tower. That is to be expected. Temperatures are, as is the case for SO_2 absorption in water, a definite deciding factor governing the height packed column required. The heat of reaction plays a much bigger roll in a limestone tower as the temperature rise is 4° C. — 7.2° F. per per cent combined SO_2 . The solubility of SO_2 is also less in a bisulphite solution than in water decreasing with amount of combined SO_2 present. Reference is made to various solubility charts in Chapter I. Cold water depresses the amount of combined SO_2 formed. A glance at Chart XXXIX explains the reason as it will be noted that the point where 50% of the SO_2 in the gas is absorbed varies with the water temperature. Consequently at lower temperatures the time of contact between gas and stone has been reduced. By increasing the gas strength to the towers the same phenomena takes place. That is the reason the combined SO_2 in the acid can be varied by change in temperature and gas strength.

A further study of Table XXX-A and -B and Chart XXXIX reveals that the half-way height or the point where 50% of the original amount of SO_2 in the burner gas has been absorbed lies:

5°C — 41°F about 5'0" up
 10°C — 50°F about 9'0" up
 15°C — 59°F about 13'6" up
 20°C — 68° about 18'0" up

It will also be noted that the remaining gas strength drops in a corresponding relation thus:

SO ₂ Content Left in Gas:	5°C	10°C	15°C	20°C
5.00%	5'6"	9'3"	13'6"	18'0"
2.50%	13'0"	20'3"	28'6"	38'0"
1.25%	21'0"	30'9"	42'0"	57'6"
0.63%	29'0"	41'3"	55'6"	77'0"
0.31%	37'0"	51'9"	69'0"	96'6"
0.16%	45'0"	62'3"	82'6"	116'0"
0.08%	53'0"	72'9"	96'0"	135'6"
0.04%	61'0"	83'3"	109'6"	155'0"
0.02%	69'0"	93'9"	123'0"	174'6"
0.01%	77'0"	114'3"	136'6"	194'6"

It should be remembered that the above refers to the manufacture of a 3.50% total acid by the use of a 10% SO₂ burner gas.

The sharp drop in true free SO₂ in the produced acid is marked. 20°C water can hardly be used to produce a satisfactory acid with a 10% SO₂ gas. The same holds true for the 5°C water, as it does not give sufficient combined in the acid. The temperature of the water between 10° and 15°C is ideal for acid making in a tower system.

For increased burner gas strength the required packed column will be increasingly shorter.



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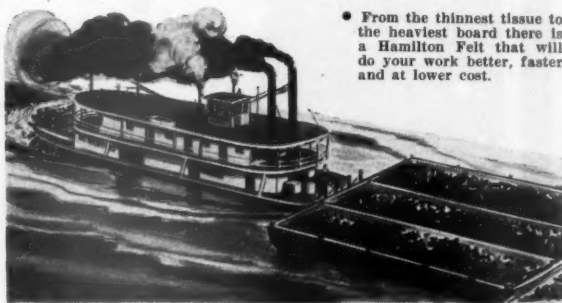
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U. S.-Canadian Machinery Firms Become Associated

A practical working arrangement between Shartle Brothers of Middletown, Ohio, Dilts Machine Works, of Fulton, N. Y., and Alexander Fleck, Ltd., of Ottawa, Ont., has been completed in order to broaden the engineering approach to mill problems on both sides of the border.

Centrifugal pumping and agi-flo agitation excepted, Fleck will handle the entire Shartle and Dilts line in the Dominion while Shartle & Dilts will promote Fleck products in the States. As of the moment, The Black-Clawson line is not affected.

The association of Fleck, Shartle, and Dilts is expected to facilitate expansion and modernization programs of mills.

Biesenthal Joins Alexander Fleck, Ltd.

C. Gordon Biesenthal has joined the firm of Alexander Fleck, Ltd., of Ottawa, as chief engineer. He has had a wide experience in the paper industry, having been associated with Canadian International, Spruce Falls Power & Paper, J. R. Booth, Ltd., and the E. B. Eddy Co.

Forestry Commission Studies Pulp-Paper Plant

Chief Justice Gordon McG. Sloan, chairman of the Royal Commission on Forestry in British Columbia, accompanied by H. W. Davey, K. C., commission counsel, recently visited Powell River Co.'s mill to gain an insight into the pulp and paper industry's relationship to the forest.

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At Camas Mill

A total of 775 employees on leave in armed forces are promised their old, or similar jobs, at the Camas, Wash., mill of Crown Zellerbach Corp. Thirty-one, already back at work are: Wm. Ash, heat room foreman; T. M. Hughes, John Tilden, Thomas E. Burnett and John M. Burnett, technical control dept.; Jim Birch, asst. foreman, groundwood mill; Jerry Carpenter, Glen Rankin and Walter Newman, shipping dept.; Tom Carras, machine tender; Cecil Conner, electrical dept.; Nels Rust and Joe Belka, millwright's helpers; Ben Faler and Glen Stoffer, rewinders; Herbert Franklin, first pressman, printing dept.; Frank Gross, converting plant; Herbert Grubs, night foreman, napkin dept.; Herbert Hansen, millwright; Jim Hays, paper inspector; Frank Holmes, converting plant operator; Edward Kropp, back tender; H. C. Morse, Jr., boilerman; Art Neiberg, finishing room; George Richanson, wood mill; Carl, Sawyer, beater room; Conrad Schick, hogged fuel storage; Wesley Sperling, bag factory; Lloyd Valsholtz, bag pressman; Ray Wadsworth, bag machine adjuster, and L. P. Waldon, asst. foreman, construction lab.

Fibreboard Man Killed

Lieut. Richard Cummings, U. S. Army Infantry, and formerly of the sulphite mill staff at the Port Angeles, Wash., division of Fibreboard Products, Inc., was killed in action near Bugallon, Luzon, P. I., early this year. He had been recommended for Captain and won the Silver Star for heroism in leading his men.

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Pins Presented At Paper Co. Meeting

All the division managers of the Zellerbach Paper Co. gathered in San Francisco July 16-18 for a meeting, presided over by Harold L. Zellerbach, president. They discussed the current sales situation and postwar possibilities.

On July 16 a dinner was held at the St. Francis Hotel, and service pins were awarded to C. R. Brown, manager, headquarters accounting dept., 15 years; E. A. Shelton, manager, resale merchandise, headquarters division, 20 years; Finley Hunt, manager, wrapping paper dept., San Francisco division, 25 years; E. A. Breyman, vice president, 25 years; A. L. "Ole" Sundberg, headquarters administration department, 40 years.

Presenting Ole's pin to him was his son, Lt. Jack Sundberg, USAF, a flyer recently returned home from a German prison camp.

Glory Palm Present At Eisenhower Ceremony

A great thrill was experienced by Mrs. Glory Palm, advertising manager, Zellerbach Paper Co., San Francisco, when she was one of 80 people invited to see President Truman present Gen. Eisenhower with the Distinguished Service Cross in the Rose Gardens of the White House.

Besides Washington, D. C., Mrs. Palm visited New York, Boston, and Portland, Me., and she was taken on a tour of the S. D. Warren paper mill at Cumberland, Me. She also visited the plant of the United States Envelope Co., Springfield, Mass.

Blake, Moffitt & Towne Plans Big Oakland Plant

Blake, Moffitt & Towne recently disclosed plans to construct a modern distributing warehouse and district offices in Oakland, Calif., after V-J Day or as soon as materials are available.

The firm, now located at Sixth and Webster Streets, has purchased the block of property bounded by 21st, Union, and Poplar Streets as the future home of the company's Oakland division, which serves Metropolitan Oakland and the East Bay area. It will be about three times present size.

According to J. L. O'Connell, division manager, the building will be equipped with new facilities for quick and easy handling of the large stock of paper, paper products, and twines which the firm handles.

Blake, Moffitt & Towne, founded in San Francisco in 1855, is this year celebrating its 90th anniversary.

Breckenridge Promoted

Chester A. Breckenridge, formerly manager of the credit department, Los Angeles division, Zellerbach Paper Co., has been made general sales manager of that division.

A new sales room has been opened by the Eureka, Calif., branch of the company at 122 West 4th St., wherein are displayed wrapping paper, printing paper, stationery, and resale items.

Owsley Returns

William A. Owsley, who before the war had served seven years with the Oakland, Calif., division, Zellerbach Paper Co., is back with the organization as assistant to Sumner Caldwell, head of the specialty dept., San Francisco.

Mr. Owsley, an amateur airplane pilot before the war, became a civilian pilot with the Army and Navy. His latest service was in the South-Pacific flying a big Martin Mariner for the Navy.

Sells to Midland Co.

The Zellerbach Paper Co. has sold its Chicago division to Midland Paper Co., a new Illinois corporation. The Zellerbach operation of the division ceased as of July 15, and the Midland Paper Co. began business on July 16, 1945.

George Mueller continued with the new owners in his capacity as manager.

Kimberly-Clark Executive

Fran Jenkins, formerly of the Pacific Coast but now general sales manager of the Kimberly-Clark Paper Co., Neenah, Wis., visited friends in the trade out here last month.

Buys Logging Co.

The Oregon Pulp & Paper Co., Salem, Ore., has recently purchased the Hickman Logging Co., operating east of Stayton, Ore. The company plans to resume logging operations in the near future.

Blackley on Coast

W. J. Blackley, vice president of the Beveridge Paper Co., Indianapolis, Ind., was a Pacific Coast visitor last month.

WANTED—Mechanical Engineer with several years' experience in the pulp and paper industry for pulp and paper mill in Middle West. Please state age, experience, salary expected, Draft status. Address Box 10, Pulp & Paper Industry, 71 Columbia St., Seattle 4, Wash.

Norman Scott of Orr Felt Required to Rest

Norman Scott, sales manager for Orr Felt & Blanket Co., Piqua, Ohio, is under doctor's orders to rest until at least Nov. 1 as a result of illness this summer.

According to a letter received by Leonard McMaster, Pacific Bldg., Portland, Ore., who is representative for Orr and other lines, Mr. Scott suffered coronary thrombosis in July and was required to remain in the Piqua hospital several weeks.

Mr. Scott has toured mills in all parts of the country for many years and was one of the earliest salesmen to visit Puget Sound mills.

A. O. Smith Consultant Tours Pacific Coast

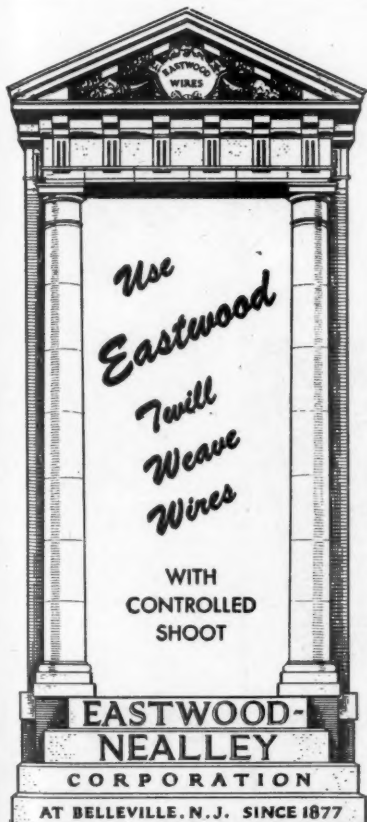
Fred E. Moskovics, Industrial Consultant, A. O. Smith Corp., 155 East 44th St., New York (17), toured the Pacific Coast from Seattle to Los Angeles during late July. He recently joined the Milwaukee firm, which manufactures pressure vessels.

Mr. Moskovics spent part of his time in company with E. R. Barrett, executive administrator, Northwest district, A. O. Smith Corp., White Bldg., Seattle (1).

New Georgia Clay Plant

A new clay plant in the Georgia clay belt, most important supply area in the United States for the rapidly expanding coating paper industry, is to be built at Sandersville. It will produce 200 tons daily of filler and coating clays.

Samples are offered by Malcolm S. Burgess, Burgess Washington Clays, Ltd., P.O. Box 270, Sandersville, Ga.



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THIS IS A SIMPLE KNOT

If this bowline looks complicated, consider the case of a paper mill felt... for weaving is actually a higher form of knot tying. There the problem really becomes an art.

In fact, so many different weaves are available... each designed to do a specific job... that choosing the correct felt is far from simple.

Why not, therefore, let a man who has specialized in felt clothing help you? Call in an Orr representative for his suggestions... without obligation, of course. THE ORR FELT & BLANKET CO., Piqua, Ohio.

RR FELTS

Pacific Coast Representative: LEONARD McMASTER, Pacific Bldg., PORTLAND, OREGON